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ABSTRACT

A project to develop a model program to instruct training personnel for an individualized manpower training system (IMTS) is reported. In two phases, January 1971 to June 1972 and July 1972 to December 1973, the project trained personnel and field tested IMTS at 10 scattered sites in California and the South. The IMTS component programs include remedial academic training, complementary skills, occupational exploration, and employability and prevocational training. Also included within the second phase was an analytical assessment of IMTS impact on trainees and institutions at the 10 pilot-demonstration sites. Though the results are conditioned by weaknesses in recording and reporting data, they do reflect the effectiveness of the training afforded through the IMTS. The staff training materials have been revised as a result of the field tests at the various pilot-demonstration sites. (Author/WH)

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THE INDIVIDUALIZED MANPOWER TRAINING SYSTEM

FINAL REPORT

IR 001 243

Technical Education Research Centers TERC

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A MODEL PROGRAM TO INSTRUCT MANPOWER TRAINING PERSONNEL IN THE SELECTION AND APPLICATION OF REMEDIAL INSTRUCTIONAL MATERIALS TO MEET INDIVIDUAL TRAINEE NEEDS

FINAL REPORT

June, 1974

U.S. DEPARTMENT OF HEALTH
EDUCATION & WELFARE
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Conducted by

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Abstract
of the
Individualized Manpower Training System

Developed by

Technical Education Research Centers
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P.O. Box 4158
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Funding Agency

Manpower Administration
U.S. Department of Labor
Contract Number 82–25–71–10

Duration

Phase I – January, 1971 – June, 1972
Phase II – July, 1972 – December, 1973

System Definition

An individualized system for delivery of basic remedial and related training with emphasis on pre–vocational and exploratory activities and accompanying staff training in technology associated with implementation.

Component Programs

Reading, Arithmetic, Language – Diagnosing and prescribing for individualized improvement of learning difficulties

Complementary Skills – Personal–social skill training including consumer education, health, etc., for individualized improvement in ability to cope with environmental events

Employability Skills – Emphasizing the development of independent control over certain behavior areas for individualized improvement in employability status

Occupational Exploratory – Opportunities to explore and to gain new occupational information while enabling an assessment of: work abilities, work quality, work behavior, work habits, interests, aptitudes, and training needs

Prevocational – Occupationally–oriented instruction in prerequisite and entrance–level skills and knowledge

IMTS Target Population

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Manpower Development and Training
Work Incentive
Vocational Rehabilitation
Neighborhood Youth Corps
Job Corps
Adult Basic Education
Vocational – Technical
Correctional
National Alliance of Business – JOBS
Veterans

IMTS Host Institutions

Skill Centers
Vocational–Technical Schools
Secondary Programs
Community Colleges
Indian Reservations
Correctional Institutions
State Trade Schools
Adult Centers
Career Education Centers
Rehabilitation Centers

Staff Training

Staff training materials are packaged relevant to phases of IMTS implementation: orientation, establishing, and operating. Multi–media materials are self–paced and self–instructional. (See Appendix B of Phase II Report for complete list.)

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Abstract of Final Report

The initial phases of the project, "A Model Program To Instruct Manpower Training Personnel in the Selection and Application of Remedial Instructional Materials To Meet Individual Trainee Needs," were funded under the Provisions of Title I of the Manpower Development and Training Act, Public Law 87-415, as amended. The project was conducted by Technical Education Research Centers (TERC) under the direction of Donna M. Seay, Southeast Director.

With an overall objective of increasing the number of qualified staff who can establish and operate an individualized system of prevocational and vocational training for adults in need of basic remedial services, the delivery of training for staff, as well as for trainees, was developed into a comprehensive training vehicle, the Individualized Manpower Training System (IMTS). System component programs include remedial academic training (reading, arithmetic, and language), complementary skills (personal–social, health, consumer education, etc.), occupational exploration, and employability and prevocational training.

Training for administrators, staff, and support personnel was initially conducted at ten (four during Phase I and an additional six during Phase II) pilot–demonstration sites, (Florida, Georgia, Alabama, and California). Technical assistance was provided for problems specific to establishing and operating the IMTS. Follow–up and assessment provided data for revising the staff training materials. In addition, training was conducted for the teacher–educator members of the project's Consortium of Colleges and Universities (CCU) who helped to monitor and to advise the project. These teacher–educators, in turn, provide staff training programs at new sites as a part of a broader dissemination and utilization plan.

Phase I of the project (January, 1971 – June, 1972) included the development of the following materials: Establishing and Operating Guides; programs in complementary skills (consumer and personal), reading, employability behaviors, and an occupational cluster. These programs build on to a Prescribing Catalog for individualized delivery of basic education in arithmetic and language. During Phase II (July, 1972 – December, 1973), the IMTS project expanded the individualized system to include prevocational and occupational exploratory programs which were field–tested at the pilot–demonstration sites.

In developing a comprehensive individualized system to service disadvantaged and handicapped youths and adults, new trainee materials were reviewed and field–tested. When necessary, these materials were revised and expanded to meet the criteria established for the IMTS, and as new materials were incorporated, individualized staff–training materials were developed.

The major components of the IMTS offer either one–shot, intermittently, or concurrently administered services for trainees. The processes of diagnosing, prescribing, managing, and evaluating are used in operating the System.

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Training for IMTS staff follows a sequential order of these processes. In addition to this order, a staff training plan includes the suggested duration of training necessary for accomplishment in the areas of establishing and operating the IMTS on an initial and long-term basis. Recommendations for location, schedule and participants for each training opportunity are provided as a guide in planning specific details.

A major goal for Phase II was an analytical assessment of IMTS impact on trainees and institutions at the ten pilot-demonstration sites. The assessment component is an improvement-oriented process for corrective and confirming feedback on IMTS methods and materials to be used in effective system management and output. Trainees were expected to show gains in academic performance from entry to exit as measured by the Tests of Adult Basic Education, the System's basic diagnostic instrument. Though the results are conditioned by weaknesses in recording and reporting data--attributed to the developmental status of the assessment component--they do reflect the effectiveness of the training afforded through the IMTS in that 91% of the IMTS trainees showed appreciable increases in knowledge and skill levels following training. However, long-range achievement and retention accountable to the IMTS requires a great deal of further study.

The training materials used for the staff training have been revised as a result of field-tests at the various types of pilot-demonstration sites. These have been packaged according to the order of their use by trainers. An analytical inventory covering all facets of the IMTS has been developed to assist potential users in determining their materials, facilities, staff, and funding requirements. Proposal outlines or "boilerplates", technical papers, and other planning materials are also available. Specially prepared descriptive items such as pamphlets, brochures and tape/slide presentations can be provided upon request. While samples of staff training packages are in limited supply, an opportunity to review any or all such items can be arranged. Finally, technical assistance from TERC can be arranged for those schools, agencies and states interested in initiating a process for the funding of the staff training and implementation programs.

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INTRODUCTION

In the past decade, tremendous strides have been made toward increasing the responsiveness of educational concepts and techniques to student/trainee educational and training needs. These strides have cut across all areas of training and education but are most evident in the programs designed specifically for disadvantaged and/or handicapped adults, an umbrella term which includes this nation's educationally and economically deprived.

Robert Mager's latest effort which is half instructional and half literary is titled *Measuring Instructional Intent* and subtitled *or Got a Match.* The title, content, and especially the subtitle of this work reflect the vein in which this educational responsiveness had moved. While Mager's reference is narrowed to selecting or creating test items to match instructional objectives, its broader reference holds import for this discipline we call education. At long last, we are matching--matching response to need.

The responsible vein to which we are referring is *individualization* Like so many other developments, individualization has grown into a far-reaching, overly defined monster with equally the number of heads as had the Lernean Hydra. And, too, as around many movements of the past, a new vocabulary has sprung up waving banners of *behavioral objectives, diagnosis, measurement, contingency contracting, prescriptive instruction, yes, even instructional intent.*

But unlike most such movements, the terminology reflects an effort to define the movement not just to the upper echelons of the discipline but to line staff as well, those persons whose task it is to implement the latest, most effective thinking. For instance, in another discipline, line staff may be told that one of their charges suffers from anxiety reaction or another from an Oedipus Complex, both descriptions being meaningful to the higher echelons of that discipline but of little use to staff normally charged with the rigors of treatment. It is, therefore, necessary for treatment to be administered by the higher echelons who must not only know that anxiety is "painful uneasiness of the mind over an impending or anticipated ill" and that Oedipus was an unfortunate mythical Greek king who unknowingly killed his father and married his mother, but must also know how these definitions relate to human behavior.

This is not to imply that treatment is not best administered by highly educated or trained professionals. The matter viewed socially and economically comes down first to numbers, i.e., there are far more line staff available to carry out the often intricate detail of any treatment program. This is just as true in education. However, educational line staff (teachers) are usually college educated while line staff in a correctional or mental health facility, for instance, may be equally as educationally deprived as their charges. (Smith, et. al., 1970; Ayllon & Azrin, 1968).

It appears, then, that neither specialized knowledge of subject matter nor facility with specialized vocabulary have much to do with effective delivery. But it does appear

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to be obvious that specialized knowledge of the target *individual* is critical to effective delivery. In individualizing intervention of any sort, whether it is educational, medical, psychological, etc., one must know the individual with whom he will be working.

Over–simplification? Perhaps. But from that knowledge of the individual, matching instructional treatment to his learning difficulties on a systematic basis is possible. So the problem becomes not one of defining individualization but rather one of defining the individual––defining him in terms of educational achievement and educational needs and from there defining specific strategies to improve his achievement by treating his needs.

Individualized education today, then, is comparable to the one–room school of the past in that a wide range of abilities, a wide range of needs, and even a wide range of ages must be accommodated. The differences lie in the advanced technology of materials and equipment, yes, but more importantly in the *systematic* approach to matching treatment (instruction) to individual need.

One method of describing innovative learning systems is to point out the focus of the system. Does it, for instance, concentrate on materials development, management, learning styles, etc. And within the focus, what types of materials are developed, what type of measurement is superimposed, and how are learning styles accommodated, etc. An effort will be made in the following pages to describe some of the better known individualized programs for the purpose of illustration. This purpose is well–suited to introducing still another individualized program, the Individualized Manpower Training System (IMTS) whose development, implementation, and extended utilization is the topic of this report. It should be noted that only a few of the existing programs were deemed appropriate for illustration here because of lack of comparability or information.

Review of the Literature

Wilson and Tosti have produced a comprehensive guide to individualized instruction, defining not only the need for achieving responsiveness in education but also defining the basic strategies for achieving it (Wilson, & Tosti, 1972). They have defined an educational system as responsive "whenever some part of the instructional sequence can be modified to accomodate the recognized special needs of an individual student."

Some Individualized Programs

Probably the nation's first large–scale implementation of an individualized educational program was Job Corps' Conservation Center Curriculum initiated in 1964. The program was designed to provide instruction for Corpsmen with a wide range of educational needs in the areas of reading, mathematics, language, arts, and vocational and occupational training. The focus of the program was on prescriptive management, i.e., using data from pretests to determine proper curriculum placement, and refining that strategy by giving progress checks after each exercise.

As a further refinement, the Corpsmen Adviser System was designed and implemented to manage the motivational aspects of the program. Basically, points are earned by students for educational achievement, work compensation, or for participation in special programs. When a pre–set number of points have been earned, they are exchangeable for promotions in rank accompained by salary increases. The Adviser System has resulted in what the authors describe as the largest "token economy" system ever developed.

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Also in 1964, Tosti and Lloyd Homme, under a research grant from the Office of Education, developed a learning system known today as PRIME--PRescription, Instruction, Motivation, and Evaluation. The original intent was to investigate the use of programmed instruction in treating the educational deficiencies of low-achieving adolescents.

From the experience that has been gained in those ten years since that initial effort, the results of placing low-achieving adolescents (or anybody for that matter) in a study hall situation with programmed texts to devour are predictable--student failure is built in. However, that failure--or near failure, for the program was saved--forms a significant foundation stone in the development of individualized programs.

Out of it, Tosti and Homme found that presenting the material in smaller frame sequences as opposed to complete texts, testing and evaluating performance on those smaller units, and providing a reinforcing (rewarding) activity for successful performance saved the program. Hence, the development of the modular instruction concept and the coining of the term "contingency management."

Certainly the effort was not a small one, nor was the contribution to future learning systems insignificant. The search for reinforcing activities alone could have presented tremendous problems had they not been creative enough to ask the students themselves. Surprisingly, they found a chance to study the Russian language quite popular as a reinforcer.

> This preference [studying Russian] is not so surprising if one remembers [or knows] that in Alburquerque [locale of the study], the police are frequently conversant in both English and Spanish.

Tosti went on in 1966 to establish an experimental center, Capital Job Corps Center, under contract with the Job Corps. The influence of the PRIME system has extended to many programs, particularly those based on or using performance contracting as a motivational strategy.

1964 appears to have been a productive year for individualized programs, for it was in that year also that Dr. Robert Glaser began the IPI (Individually Prescribed Instruction) System at the University of Pittsburgh. The focus of the system was the development of an individualized curriculum of programmed workbook assignments to be prescribed for reading, arithmetic, and science for children in the elementary grades. A redundancy strategy was employed in that students failing to master the objectives several times were presented "more of the same" until the concept was learned.

Research for Better Schools took the project and refined the materials and procedures so that it is now a "carefully engineered sequence of detailed behavioral objectives and criterion-referenced tests" for youth and adults. It is interesting to note that the tasks of monitoring student behavior are complex and time-consuming even with wide-scale use of paraprofessional volunteers and teacher's aides. However, the

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program leans heavily on frequent feedback to learners which requires constant monitoring of progress and continuing diagnosis so that monitoring tasks could be expected to consume sizable portions of implementation time and effort.*

In recent years, the importance of learning styles (cognitive style mapping) has been recognized. Probably the most advanced work done toward identifying individual learning styles has been undertaken by Dr. Joseph Hill, president of Oakland Community College, and his research staff. Basically, his method for defining individual learning styles involves developing a multidimensional profile of student characteristics and using the profiles to match presentation media to student learning style. Whether or not these profiles actually do identify an individual's learning style, there is reportedly a high degree of internal reliability in them.

According to Wilson and Tosti, the profiles are used in the management decisions on a systematic basis but little or no data has yet been produced to correlate these matching decisions with actual student achievement.

Finally, the program having the most direct influence on the IMTS academic component is another Individually Prescribed Instruction (IPI) System, this one developed by the Rehabilitation Research Foundation at about the same time as Dr. Glaser's IPI Pittsburgh Program. Like most of the programs previously discussed, early experiences began in 1962 by trying out programmed materials on a specific population group--this time with male offenders incarcerated in a state institution. Even with the inadequate materials which were available (circa 1962–63), the offender population experienced a good bit of successful learning. Interestingly enough, they, too, were intrigued with the possibility of learning the Russian language.

In conjunction with the experimental and demonstration work conducted by the Foundation, a prescriptive learning system evolved. The Foundation's system drew from arithmetic and language materials already on the market and coordinated the instructional modules to the skill areas tested by the Tests of Adult Basic Education (TABE). Further refinement of matching skill to need produced criterion–referenced tests for each module, one form to be administered as a pretest and another form to be administered as a posttest.

A number of experimental studies were conducted using the IPI System as a delivery vehicle to test the built–in reinforcing quality of the System, as well as to test the efficiency and effectiveness of the System operated under contingency management conditions.

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* It should be pointed out that the IPI System Pittsburgh and the academic component of the IMTS--specifically the arithmetic and language programs--are similarly constructed according to method, i.e., the diagnose–prescribe feature based on a modular analysis of learning difficulties. Although the differences are apparent to those familiar with both programs, the more significant ones should be noted. IPI Pittsburgh (now Research for Better Schools) is a narrowly prescribed system, depending as it does on instructional materials developed specifically for that system; the IMTS draws prescriptive materials from the commercially developed market. Of even greater importance is the lack of a complete and systematic staff training component for the former system, while a systematic approach and materials to staff training are the focus of the IMTS. These differences most likely occur from a basic developmental premise of the IMTS, that of striving for greater flexibility of materials and staff training.

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Out of these efforts grew several indices which are not unique by definition but are effective in their consistent application to managing a learning system for near–optimum student achievement. (See Methodology.) More important, however, were the implications for staff––both professional and paraprofessional––to be trained to establish and operate an individualized learning system.

While the programs discussed herein have many common features and particularly a common goal of matching instruction to individual student need, there is little, if any, indication that those same strides made for students have been made, or even attempted, in training staff to implement the system as they were designed to be implemented. This has been a critical omission in terms of outcomes, for a system is not worth the time and effort expended in the design unless it is managed as it was designed to be managed.

Although many teachers in today's educational systems, both public and private, are attempting to individualize their instruction, the task is a tremendous one, particularly with such constraints as over–crowded classes, administrative functions, etc. All of the programs discussed imply or state a need for training staff to implement them according to design. But the literature does not reflect staff training as the focal point for any of them. The focus of the IMTS is on training staff to establish and operate the System for greater trainee achievement. In addition to a definite staff training package or pattern, there must be equal definition for administrative monitoring to see that they do.

The IMTS

A functional individualized instructional system is first of all a system: the linking of a number of different operating parts. It is a coherent whole, intended to train each individual to the maximum proficiency his abilities will permit; and this is generally accomplished in the shortest possible time. In the IMTS, this definition is applicable to staff training, as well as the delivery system for training trainees.

The IMTS not only hinges on effective and efficient management to produce trainee achievement, it is totally dependent upon it. It is, therefore, critical that staff receive intensive training by using a systematic approach comparable to that used with IMTS trainees.

There are three fundamental phases of preservice staff training: (1) orientation, (2) establishing, and (3) operating. With the skills learned in each phase, IMTS staff can effectively and efficiently establish and operate the IMTS with minimal technical assistance and follow–up.* Most of the skills are generalizable to any individualized learning system which meets the previously mentioned of such a system.

Orientation. In an individualized learning system, the trainee's whole instructional program must be managed individually. For example, a trainee may be engaged in many general areas of study at the same time: basic remedial education; employability and

*Because of the developmental status of the IMTS, there is no established minimal. However, on the basis of experience, staff can now operate the System with 3 visits and perhaps several phone calls, taking off independently after six months.

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occupational skills development; and related or theoretical instruction. There is usually a strong counseling program and provisions for group interaction activities. The different areas must be managed to the best advantage for each trainee. Usually the goal is to permit maximum time in the occupational skill training as soon as possible, with only those loops back into other motivational and instructional activities that are necessary. This demands a maximum coordination of counseling and training staff.

There is, then, an obvious necessity for all who will have any relationship to any part of that whole instructional program to be familiar with concepts and procedures of the program. It is also necessary, or at least desirable, for administrative personnel at all levels of implementation to be knowledgeable in those concepts and procedures.

To meet these needs the IMTS has developed a comprehensive orientation phase for staff, administrators, and other involved personnel and a comprehensive orientation phase for IMTS trainees.

Staff orientation is accomplished in a one–day workshop. By the time this workshop is conducted, at least the IMTS coordinator has been selected and possibly other line staff. Certain materials have been developed which give participants a brief overview of the System and how it was developed. These, for the most part, include tape/slide presentations, transparencies, and handouts. (See Appendix B for description of materials.) In addition, however, participants complete a partial prescription for a sample trainee in order to become familiar with the basic diagnostic and prescriptive procedures. This activity plus other simulations contribute to an awareness of the concepts of the System.

Visits by administrators to operating sites before and after the orientation also help them to visualize and understand what is needed to implement the System. In general, participants are given enough information during orientation to justify their establishing an IMTS according to specifications.

Establishing. The field of participants narrows somewhat for the establishing workshop to include those persons who will be peripherally but close to and/or directly involved in the IMTS. The information provided in this workshop is more specific and is directed toward planning and writing the proposal for the IMTS, figuring a budget, and developing a plan of action for staff who will be establishing the System. In preparation for the development of the proposed plan, specifications for staff, furniture and physical prerequisites, instructional equipment and materials, and the arrangement of and physical requirements for space are reviewed.

To assist participants in these tasks, the ***Establishing Guide*** has been developed which includes sample floor plans, specifications for physical arrangements and furnishings, an ordering factor for instructional materials, specifications for coding and setting up instructional materials, job descriptions, etc. Accompanying the ***Guide*** are forms to be used in operating the System. Another product developed to assist IMTS staff in figuring a budget is the ***Itemized Budget for Establishing the IMTS*** which includes an inventory form and specifications and prices of materials and equipment for each component program.

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By inventorying those materials, equipment, and supplies on hand, considerable monies can be saved, and materials and equipment currently collecting dust can be brought into effective and systematic use.

At the conclusion of the normally two-day workshop, staff have a proposal with budget and plan of action, including staff assignments, for establishing an IMTS. They are then instructed in the procedures for processing the proposal.

Information pertaining to possible funding resources for the establishment and operation of the System are shared and discussed by participants. Since each state is organized differently, TERC has developed a chart from two states indicating their sources of funds. (See Appendix C for California and Florida funding charts.)

Interim Activities

Before an operating workshop is conducted, staff assignments should be made, facilities should be completed, most of the materials and equipment received, and the Learning Resource Center should be set up for operating. This time-lapse and the activities completed between the establishing and operating workshops are crucial to the staff's readiness for the detailed instruction of the operating workshop.

Staff Assignments: IMTS staff include a counselor-coordinator or head learning manager and a minimum of one learning manager and two aides or assistant learning managers per 90 students per day. One aide should have clerical qualifications since this clerk aide would collect and compile trainee data.

Job descriptions for each position are included in the *Establishing Guide*. In addition, forms have been developed which are coded according to the task specified in an operating guide developed for each component program. These forms are used in assigning staff to the tasks on the basis of "routine tasks," "assist as necessary," and "specific request only." There is also a column which instructs staff "Do not do this task." The latter specification was designed to avoid the trainee's becoming confused by overlapping staff decisions.

The assignment forms also provide a means by which staff can signify their readiness to be assessed on their performance of the given tasks and the indication of their competency in that performance by supervising personnel. These forms are effective management tools in that staff know what is expected of them. The competency check is also reinforcing for their effort in performing the tasks assigned to them as specified.

IMTS Facilities: The IMTS is housed in facilities referred to as Learning Resource Centers (LRC). The figure below represents a *recommended* floor plan, though the *Establishing Guide* offers variations on the basic plan.

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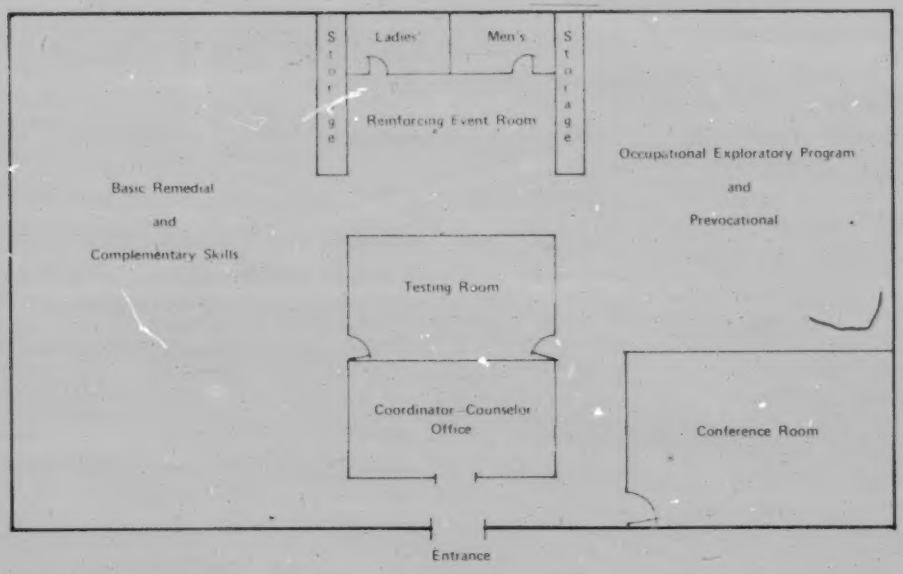

Fig. 1. IMTS Learning Resource Center Floor Plan

The LRC is usually located within or adjacent to an institution which needs a vehicle for providing remedial instruction and/or occupational exploratory and prevocational experiences to a sizable number of students. At present, these institutions include: vocational–technical schools and colleges, youth training schools (correctional), a metropolitan skill center, an Indian Reservation, community colleges, adult centers, career education centers, and rehabilitation centers.

Materials and Equipment: For the most part, IMTS materials and equipment for trainees are purchased by the IMTS site directly from the publisher or from their vendors. Instructional modules, usually only portions of a programmed text, must be coded as they are found in the bibliography of the *Prescribing Catalog*. Module tests, Forms A (pre) and B (post), must be filed by code as do the corresponding answer sheets.

The basic procedures for getting materials and equipment in order for operating are included in the *Establishing Guide*. During the operating workshop, staff are given more detailed instruction in efficient management of the System via a program design for that purpose.

IMTS–developed trainee materials consist of an orientation tape/slide presentation and the Employability Program. The former was designed to give trainees a general idea of how the component programs fit together and the advantages that they can derive from the System.

The Employability Program was developed for trainees because the market was rather devoid of materials which are both suitable for individualized delivery and have

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stated behaviorable objectives through which staff and trainees can take measures of progress being made. Research has consistently pointed to the need for training individuals to be "good" employees, i.e., from the employer's point of view. Behaviors concentrated on in this program include time–keeping, job performance, and care of property and resources.

The program consists of a tape/slide module instructing trainees in the use of a progress plotter to score their daily behavior in those concentrated areas, a monthly improvement chart, and a monthly improvement graph. These instruments were designed to develop within the trainee independent self–control over these behavioral areas. It is assumed that self–developed control in these areas during training will be generalizable to the more stressful situation of employment.

A programmed module has been developed for training staff to implement and manage the Employability Program for trainees. This program can be completed individually and is usually assigned prior to the operating workshop.

The interim period between workshops also allows staff time to prepare themselves for the operating workshop activities. A list of texts, programs, tapes, and filmstrips has been compiled for staff–development. (See Appendix B.) These include the theoretical concepts and techniques upon which the System is based. Because management techniques inherent in individualization of instruction differ markedly from those applied to conventional group instruction, a sound theoretical background for staff is critical to successful application of those techniques. Of course, this sort of self–study program cannot be accomplished completely before the workshop, but is a continuing process.

In addition to the self–study materials, staff are given assignments prior to the operating workshop which are designed to enhance their participation, as well as to hold the workshop time to a minimum.

Once the activities described have been completed, staff are ready to learn to operate the IMTS.

Operating. The operating workshop is a mixture of individual and group activities using multi–media materials which are self–paced and self–instructional and sequentially ordered. Where available, staff are allowed to choose between printed and tape/slide media for their instruction.

In order to understand the training procedures to insure that staff operate the IMTS according to specification, it is necessary to understand, first, the components of the System and then, the relationship among them.

The IMTS is a specifically constructed system for trainees and implies a comparably systematic approach to training staff. At the trainee level, the IMTS describes a systems process for getting individualized delivery; at the staff level, the IMTS provides training in the technology associated with that system's approach.

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The IMTS was designed to provide remediation in basic education and related training with emphasis on exploratory and prevocational activities. The component programs include reading, arithmetic, and language; complementary skills; employability behaviors; and an occupational exploratory program including work samples and prevocational training.

The following chart indicates the avenues of training and guidance open to the trainee upon entry.

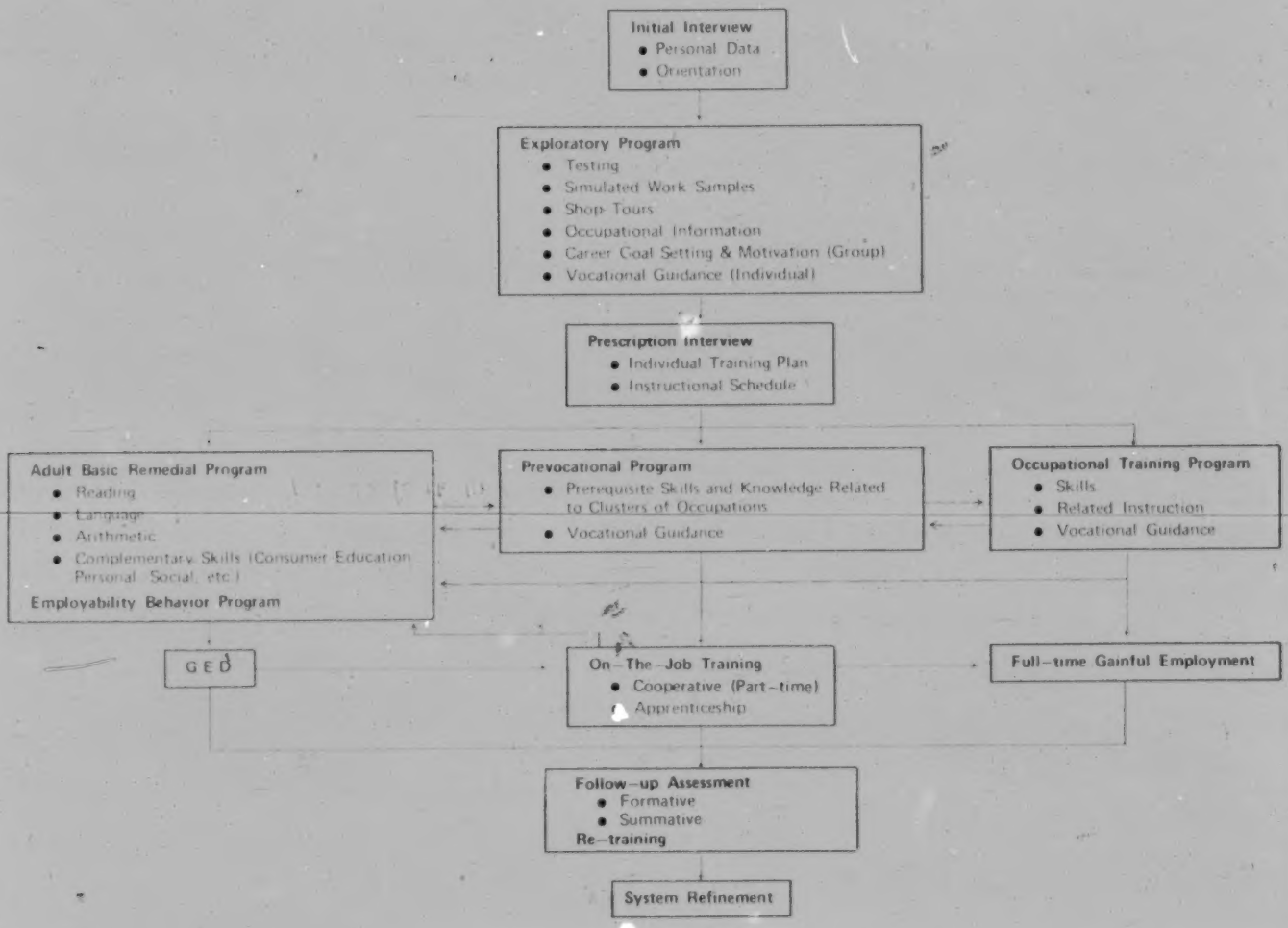

Fig. 2. IMTS Trainee Flow Chart

Each of the IMTS components can stand alone if necessary but the interaction among components strengthens the training provided for IMTS trainees. This interaction is designed to provide comprehensive treatment in that the major components of individualization are not only considered but permeate the whole training situation.

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Individualization as a discipline demands that individual *goals* be set and measured; that individual *diagnosis prescription* and *evaluation* be basic to operation; that *learning materials* be correlated to specific objectives and designed for independent use; that the individual determines *his own rate* of progress; and finally, that the individual's complete training program be *managed individually*.

The above processes of individualization will be employed in describing the components of the IMTS. It is through these processes that the interaction among IMTS components programs becomes the strength of a system and provides the greatest benefit to trainees and staff alike.

Processes of Individualization in the IMTS Components

Goal setting. Goals should be set according to the individual's specific needs and interests, usually a compromise between the two. This means that a goal–setting program is needed to help the individual select achievable goals that have relevance and motivational value to him. Determining what has relevance and motivational value to an individual is a rather large order, even for the individual himself. The IMTS component through which goal setting is accomplished is the Occupational Exploratory Program (OEP).

Through the OEP, individuals get hands–on work experiences from work samples representative of many kinds of jobs and occupational clusters. Such experiences give both the individual and the instructor firm bases to compare, contrast, and analyze objectively many specific occupational areas in simulated multi–media work settings. These work samples provide the individual an opportunity to explore and to gain new information while enabling an assessment of his work abilities, work quality, work behavior, and work habits; his interests and aptitudes; and his training needs.

During his participation in the OEP, a group motivational activity is conducted through which he examines his values, his strengths, and his success factors (praise, ability to choose what he does and how he does it, helping someone else, money, etc.). This is a positive activity which focuses on successes, past and present, and, in short, helps the individual learn about himself, resulting in his setting goals for his future. The AIMS package is referred to in greater detail later.

Individual diagnosis. Whether these goals are achievable depends upon what the individual has already achieved and what he needs. What an individual knows and does not know in any given area in which training is to take place is diagnosed in terms of specific skill abilities as they relate to the individual's goals. Proper diagnosis in terms of observable performance is first and fundamental.

In addition to the OEP activities described, an achievement test is administered to determine the need, if any, for remediation in basic education. The basic remedial component offers instruction in reading, arithmetic, and language *matched* to individual needs through a process of diagnosing and prescribing. An analysis is made of TABE performance, item by item and skill by skill, in those tested areas (reading, arithmetic, and language). The analysis for arithmetic and language is accomplished via a specially developed form, the Modular Analysis of Learning Difficulties (MALD).

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These gross diagnoses are further refined through the administration of criterion–referenced pretests once a specific prescription has been developed for the individual to treat those difficulties determined through the analysis.

Reading presents a special problem in that the many skills involved are not easily identifiable. The IMTS deals with reading on an initial placement–management–evaluation level, leaving the specific detail of diagnosing to commercially developed diagnostic materials in multi–media format. Initial placement is, however, based upon performance on the reading test of the TABE.

Individual Prescription. In reading, individuals are placed in commercially–developed reading programs, specifically *EDL–100/300* (Educational Development Laboratories, Inc.) and *Reading Technology* (MIND, Inc.), on the basis of the TABE achievement score in reading. Other materials are also recommended to supplement these programs. Reading Technology has a complete diagnostic series which allows a more accurate matching of instructional treatment to the individual need.

In arithmetic and language, a prescription is developed for the individual on the basis of the analysis of his TABE performance, the MALD. The prescription is a set of sequencially–ordered modules of instruction in printed, audio, and/or audio–visual format. The form used in developing the individual's prescribed course of study becomes his study schedule.

Individual evaluation. Evaluation must be a frequent and continuous process. In a conventional classroom, the students may take a test and have their scores generally compared to identify who passed and who failed. In an "individualized system," each individual is tested only in terms of his own progress and accomplishment, and not those of the group. His mastery or the correction of a limited range of his own deficiencies is the absolute norm for him. The evaluations are more frequent and are oriented toward the objectives he is trying to accomplish. Individualized evaluation covers only the skills and knowledge the individual learner has studied and practiced.

Thus, each student is posttested immediately upon completion of each module. Several management strategies are employed based upon the individual's posttest performance. If he scores 84% or better, he progresses to the next sequence of instruction. Should the score be less, he must review the module again and re–attempt the module posttest using an alternate form. Failure on a second attempt is treated by brief tutoring while failure on a third attempt is treated by prescribing an alternate module, preferably a different mode.

With frequent evaluation, feedback is immediate on what is wrong or right, and why. The individual's performance at each checkpoint determines the management strategy. The test does more than just evaluate performance: It is a formative tool that is used to guide and ultimately guarantee his success. In this sense, there are no failures, although some students may progress more slowly than others.

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Learning Materials. OEP materials included the Singer Vocational Evaluation System, the Xerox Technology Series, a group motivational program, occupational information, and tests (achievement and interest). Under the present project, the IMTS was committed to the use of available shelf material, commercial or public domain. However, schools are encouraged to investigate new materials, especially simulated multi–media work samples as they become available. Here and elsewhere, the System is designed to be flexible and accommodate any new materials which have stated measurable behavioral objectives. The IMTS does not lock anyone in except in terms of what is presently available on the market.

In addition to the TABE, occupational interest inventories are used in the diagnostic process. Where schools are already administering aptitude tests, these results are also considered in helping trainees establish their occupational goals.

Achieving Individualized Motivational Systems (AIMS) developed by Dr. James J. Nugent of PMA Institute is used for career goal setting and group motivational activities. AIMS is a guide to help persons achieve an awareness of their own motivational system, to improve self–concept, to recognize and build on motivational strengths, to identify and serve one's own values, to set goals that lead to greater achievement and immediate action, etc.

The selection of AIMS does not imply unavailability of other programs. The search was for a motivational, goal–setting program which does not require a psychologist or highly trained individual to implement it. The AIMS program was found to be effective in a relatively short time frame with the added feature of providing clues for staff members to give trainees motivating responses later on down the road.

An essential OEP activity allows trainees to tour the various occupational training labs and sample the training, resulting in exposure to a larger number of occupational areas. Lab instructors, in most cases, must develop their own training samples for the individual course.

Prevocational materials include Tool Technology (MIND, Inc.), which provides simulated instruction in using basic tools, and Power Typing (MIND, Inc.), a cassette audio program. Technical assistance has been given in coordinating other materials to specific curriculums, such as RPN training, etc.

Materials for reading, arithmetic, and language are all commercially produced, can be used independently, and are correlated with specific objectives. In the last few years, the market has much improved in the number of suitable materials available.

Under the present project, TERC has greatly expanded and improved the IPI Prescribing Catalog developed by the Rehabilitation Research Foundation to take advantage of the new market, as well as to incorporate multi–media formated materials with the printed programs already included.

These materials are designed to provide fundamental skill training but offer limited range for application of those skills. Application appears to be crucial to retention over any significant period of time. Trainees who are concurrently enrolled in occupational

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training have the advantage of being able to apply the newly learned basic education skills immediately and frequently.

However, there has been little coordination of those skills which complement the personal and social aspects of life. Many such skills are founded on those specific basic skills of reading, arithmetic, and language.

An IMTS component not yet discussed was developed specifically to offer training in the personal–social skills and to offer a broader application of basic skills. The component is the Complementary Skills Program. Materials for this program offer a variety of topics, such as buying a car, paying for a funeral, establishing credit, health and nutrition, etc.

The format of the Complementary Skills instruction is developed similarly to the arithmetic and language instruction. Materials are broken into modules, and each module has an accompanying pre and posttest. At present, however, diagnosis is limited to knowledgeable judgments by staff and/or trainee selection based on a student's personal needs and occupational goal.

The Complementary Skills program is also used as a reinforcing break from straight academic work and is often prescribed in conjunction with academic work. For example, a trainee working with "percentages" on his arithmetic prescription might be assigned the Complementary Skills module, "The Pay Check." Such an assignment provides a break away from his arithmetic prescription and also provides relevant application of those basic skills he is learning.

Individual Pacing. Throughout each component the individual determines his own rate of progress. Two factors primarily will govern his speed: innate ability and motivation. A brighter, more motivated individual can move at an accelerated pace. He will make a contract with his learning manager and then proceed as fast as he can to master each prescribed module. A less able or less motivated individual will progress more slowly. However, neither will be compared with the other, but only against his own previous performance. Except for some individuals of very low innate ability (who perhaps need some other types of corrective services), motivation is helped if the possibility of failure is reduced radically. The learning manager does not permit a trainee to "bite off more than he can chew" until he gains enough confidence to take risks and handle the knowledge of his limitations. Initially, he is practically guaranteed success for any effort at all. This initial success breeds confidence and motivation to achieve more.

Individual Management. Because each trainee's program must be managed individually, the total "system management" may appear to be quite complicated. Various forms relevant to each component program have been developed to facilitate efficient management, freeing staff to work toward developing within the individual independent behavioral patterns which should sustain him once he is out of the training situation. Systematic management of trainee behavior as it relates to goal–setting, achievement, and motivation is essential. The foundation for this management is a continuous and systematic evaluation and productive interaction between staff and trainee.

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Total system management is achievable through the staff training provided in the operating workshop. During the workshop, staff are walked through the basic procedures of diagnosing, prescribing, managing, and evaluating as they apply to each component program. The operating skills are accomplished through simulated exercises, demonstrations, and evaluation according to the degree required for each staff member to perform. For example, an administrator would not be expected to perform certain tasks to the extent that a learning manager would be required to do. However, he should be able to recognize whether staff were implementing the basics of the System as designed.

Technical Assistance and Internship. There are phases of staff training other than the orientation, establishing, and operating workshops which occur after these formal training experiences. Technical assistance is provided as a result of newly developed materials, procedures, and/or techniques and/or particular staff needs. This form of training is usually conducted on-site and centers around specific training objectives. During such on-site visits, IMTS staff are able to relate specific difficulties they may have had in implementing any part of the System. Problem-solving sessions result in either retraining or program alterations.

An internship program is the preferred mode for one application of training in operating procedures. Staff who have completed the simulated training provided during the operating workshop go on site and observe and work with actual trainees in an actual Learning Resource Center. These trainees and their learning environment provide staff with the challenge, and the frustrations as well, of the learning situation. Under the guidance of staff who are already proficient in operating the System, the intern can apply newly learned skills and expand his knowledge of the philosophy and concepts of individualized education.

The foregoing pages describe the IMTS as it has been developed and field-tested to date. With these component programs developed to a point of effective utilization through comprehensive staff training, the need for truly individualized and systematic occupational training becomes more urgent.

Because of the staggering needs for individualized occupational training, there is a tremendous temptation to exert every effort toward mass individualization, i.e., individualizing all training in all areas. However, such an approach would be superficial, at best, and detrimental to the whole area of vocational education. The obvious direction, then, is development of a prototype cluster with built-in generalizable features for other clusters.

One prototype occupational cluster course, Internal Combustion Reciprocating Engine Repair, has been designed for the IMTS but has yet to be tried out. Products resulting from the developmental effort include: a task analysis; a study schedule for each task giving the name of the task, performance objective, list of materials and equipment needed to perform task, related instruction references, laboratory experiences, sequence for performing steps, and an evaluation record of progress; and a study and performance sequence chart for all tasks.

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In order to develop these products, it was necessary to survey, evaluate and select appropriate instructional modules for each performance objectives. Appropriateness was based on criteria developed by TERC for the IMTS. (See the IMTS Establishing Guide.)

Establishing specifications and operating procedures and evaluation instruments have been developed for tryout purposes. The eventual tryout and revision will lead to:

1. A list of available performance–oriented instructional modules which can be used to individualize the core curriculum in one occupational cluster area.

2. A guide with procedures and forms needed to insure accountability and individualization of a common core of skills and knowledge for the cluster.

3. A prescribing catalog and related forms required for proper sequencing of individualized training modules in the cluster area.

Ultimately, trainees in vocational, technical, and manpower training programs will benefit from these products and experiences. The fact is that a truly open–door and open entry–exit policy can be implemented only when courses are individualized. This means that unqualified or unprepared trainees can enroll and receive whatever training they need to qualify for or to progress in a training course or on the job. For example, a trainee would have the opportunity of learning at his own pace the prerequisite skills and knowledge which are so frequently enrollment requirements. Then he would have the opportunity for learning in an occupational training laboratory and in a related instruction classroom; again, at his own rate.

Another benefit, which would be possible through an individualized course, is the opportunity for trainees to enter at any time and to complete the course whenever all course requirements can be met, regardless of how long it takes. More qualified and motivated trainees will be able to terminate their training and be placed in jobs earlier than the normal time scheduled in traditional programs. At the same time, the less qualified, the educationally disadvantaged, will be able to complete the course even though it might take longer.

Eventually, expertise can be developed that will allow an expansion of services making individualization possible in other occupational areas. Such a result would have significant national impact for Vocational Education in that states could begin to contribute toward effective individualized systems which have accountability and coordination as integral features.

Summary

Recognizing that the IMTS––along with other programs with similar goals––cannot claim validity until some hard data supporting such a claim are produced, TERC set out to devise methods of measurement and evaluation. The remainder of this report describes the method employed in that effort and the results thereof.

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METHODOLOGY

Developmental Design

The various developmental stages of the IMTS were accomplished over a 36–month period. Though there is some redundance in reporting, the developments of Phase I, including the four original pilot–demonstration sites, are considered here also. Most of the Phase II products and much of the trainee data result from that earlier developmental stage. Therefore, distinguishing clearly between the phases would not facilitate an understanding of the total effort.

One of the primary objectives of Phase II was to field test the new products produced during Phase I; these include a reading management program, and complementary skills programs, and an occupational exploratory program. In addition, the basic products and procedures of the System were to be improved on the basis of evidence derived from extended try outs and incoming trainee data. For instance, data were collected which were used to determine weak or confusing instructional modules. These data include the specific number of attempts at a given module by individual trainees, the time required to complete the module successfully, and any difficulties noted with the material.

Revisions have been made to the System's basic instrument, for the arithmetic and language component, the Prescribing Catalog, as a result of these data.

The vehicles for field–testing the staff training materials were the orientation, establishing and operating workshops conducted to train staff at the six Phase II pilot–demonstration sites and the technical assistance program for both Phase I and II sites. Two of the Phase II IMTS sites are located in Florida, furthering that state's commitment to utilization of the IMT System. The four remaining Phase II pilot demonstration sites are located in California under the supervision and guidance of the California Youth Authority. Phase II sites were selected in much the same manner as those of Phase I. (See Phase I Report.) By design, however, Phase II sites as of December 1973 offer a broader utilization of the System, extending it to community college and correctional populations, as well as beyond the southeastern region of the United States. The following figure reflects the types of institutions served by Phase I and Phase II pilot–demonstration sites.

Phase	Pilot–Demonstration Site	Location
I	Lewis M. Lively Vocational Technical School	Tallahassee, Florida
	Atlanta Area Technical School	Atlanta, Georgia
	J.F. Drake State Technical Trade School	Huntsville, Alabama
	Gadsden State Technical Trade School	Gadsden, Alabama
II	Miami Skill Center	Miami, Florida
	Indian River Community College	Ft. Pierce, Florida
	Youth Training School (Correctional)	Chino, California
	Southern Reception Center and Clinic (Correctional)	Norwalk, California
	Ventura School (Correctional)	Camerillo, California
	DeWitt Nelson School (Correctional)	Stockton, California

Fig. 3. Pilot–Demonstration Sites

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Also by design, newly developed materials were tried out with members of the Consortium of Colleges and Universities (CCU) who are teacher educators and have served the project in an advisory capacity since Phase I. (See Appendix D for a list of members and their affiliations.) Once the materials for training staff to establish and operate the System had been tested and refined to the point deemed ready for implementation, CCU members were asked to go through them making comments from their experience in educating teachers as to the appropriateness of the content and format. These comments were likewise tested and incorporated in the final products.

Staff Training

The approach to training staff to establish and operate the IMTS is designed to correspond as nearly as possible to the training which they, in turn, will provide for trainees. That is, IMTS procedures are presented in a logical, sequential order as indicated in the following figure.

SEQUENCE OF STAFF TRAINING	RECOMMENDED SCHEDULE	EXPECTED OUTCOMES
1. Orientation Workshop (1 day)	To be set by staff and trainers	Knowledge pertaining to: Project Goals IMTS Component Programs IMTS Staff Training Requirements Role of Cooperating Agencies
2. Establishing Workshop (2 days)	Immediately following orientation	Specifications for IMTS Proposal for Establishing and Operating the IMTS Processing Procedures
3. Self-Instructional Assignments (8–10 hrs. on Site)	During the month prior to Operating Workshop	Knowledge of IMTS: Concept & Goals Content Procedures Tasks & Criteria Operating Guide Complementary Skills Guide Employability Program Formative Assessment and Management Program
4. Operating Workshop (5 days on Site)	After facilities and staff are established	Knowledge and skills to: Diagnose, Prescribe, Manage and Evaluate the IMTS Component Programs
5. Internship * (2 weeks--Intern Site)	Immediately following Operating Workshop	Practical experience with trainees in operating the IMTS under supervision of trained staff.
6. In-service Technical Assistance * (6 days on Site)	Site Visits: ** Bi-monthly or Quarterly	Problem-Solving Advanced Training PI Process and Products How to Evaluate, Select and Correlate Instructional Materials

Fig. 4. IMTS Staff Training Plan

*Internship and In-service Technical Assistance are ideal training situations; however, they are not absolutely essential to operating the IMTS.

**See footnote on page 5 .

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With the exception of the Orientation Workshop which is primarily a group presentation, staff training is also individualized to meet individual staff needs. This applies not only to the format for presentation but also to task responsibilities in accordance with specific staff positions.

Training Groups

IMTS Operation involves training for three different groups: (1) for teacher–educators and monitors (2) for IMTS site staff, and (3) IMTS trainees. Because of the variance among sites and states, the three groups of trainees will be discussed individually.

Teacher–Educators and Monitors. In California, the four IMTS sites are monitored by two members of the Youth Authority's research staff and two supervisors. They have participated in all phases of IMTS training, as has the Senior Research Analyst. The research staff is responsible for the collection and analysis of incoming data from the four sites. These IMTS related tasks are performed in conjunction with other Youth Authority responsibilities.

CCU members received training in all phases of IMTS operation and contributed to most of the final products. Two CCU members, the Universities of West Florida and South Florida, provided assistance in training IMTS staff at the two Phase II Florida sites. In addition Dr. Hobdy Perkins of the University of West Florida has coordinated and conducted the training for IMTS staff during further expansion of Florida's utilization of the System. (See Utilization section.) Members of his staff received training in IMTS methods and procedures, in some instances along with IMTS staff, and are assisting in the expansion training.

The Consortium is comprised primarily of teacher–educators from various institutions of higher learning who share a common goal of providing adequate training to the disadvantaged and handicapped. The specific responsibilities of the membership throughout both phases of the project were to:

- Provide assistance in planning for project implementation
- Recommend individuals with expertise in the areas where special assistance was required
- Consider and discuss any new or innovative ideas from members of the Consortium or project staff
- Assist in formulating the assessment procedures
- Advise staff on the utilization plans for teacher educators
- Send teacher educators to pre–service and in–service training sessions and practicums
- Include the staff training program in their respective teacher education curriculum if program proves to be effective

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- Conduct institutes or workshops to promote the utilization of an IMT system
- Conduct training programs for operating staff in an IMT System
- Sponsor pilot demonstration of basic remedial education in an IMT System

IMTS Staff. The staff trained to establish and operate the IMTS includes the administrator of the learning center (the individual who must be knowledgable in all aspects of the program); all teachers in basic education, prevocational and occupational areas; and counseling staff. In actually operating the System, the administrator and one or more learning managers and assistants or aides are involved as indicated in the following table.

TABLE 1

Staff by Position for the Ten IMTS Pilot–Demonstration Sites

Site	Manager/Counselor Coordinator	Learning Manager	Assistant Learning Manager or Aide	Clerk	Other
Lively	1	3	2	0	
Indian River	1	2	3	0	11 Part–time Staff
Miami Skill Center	1	2	1	0	
Drake	1	2	1	0	
Gadsden	1	0	1	0	
Atlanta	1	1	1	0	
YTS	1	7	4	1	9 Ward Aides*
Ventura	1	1	2	0	2 Ward Aides
SRCC	1	1	0	1	
DeWitt Nelson	1	3	3	1	
TOTAL	**10**	**22**	**18**	**3**	**22**

*Ward Aides are CYA wards who are not in need of IMTS services and are capable of providing assistance to regular IMTS staff.

IMTS Trainees. This sample includes only trainees who could read at least well enough to be tested on the TABE initially. Average test results often reflect trainees who couldn't read initially but were brought up in reading to a level of capable performance on the TABE. Test scores contained in these data are *total battery scores,* with the averages across areas (reading, arithmetic, and language) being either raised or lowered by performance in a single area.

Sites were asked to send in Personal Data Forms on all trainees upon whom complete data had been collected. Due to work loads, most sites were unable to furnish these data before the cut–off date for tabulation. The age range at all sites was 14 to 71 years, with averages varying from an estimated 18.5 years at one site to 26 at another.

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Trainees at all sites (with the exception of the correctional sites) were enrolled on a referral or self–initiated basis. No effort was made to match trainees on any basis nor were any comparative controls selected. Descriptions of the trainees at each site follow:

YTS, SRCC, Ventura, and DeWitt–Nelson. Trainees are wards of the California Youth Authority; wards are predominately male, i.e., only Ventura is co–educational. The average age of Youth Authority wards is 19.0 years and the average length of stay in the correctional facility is 11.0 months. A substantial number of CYA wards (approximately 2,700 of the 4,000 population) have serious deficiencies in reading and mathematics. Because the reading component was not yet implemented at Ventura, no trainees reading below 5.0 level as tested by the Tests of Adult Basic Education (TABE) were accepted.

Indian River Community College (IRCC). Trainees are both male and female residents of the four adjacent counties serviced by the college. IRCC trainees include significant numbers of migrant workers and vary widely in age; approximate age range is 16 to 71 years. IRCC also services non–English speaking trainees

Gadsden State Technical Trade School. Trainees are both male and female residents of counties surrounding the northeast Alabama city of Gadsden. Although many trainees are high school graduates, grade level at entry tests out at an average of 7.08. Trainees range in age from approximately 17.0 years to 60.0+ years.

J.F. Drake State Technical Trade School. Drake trainees are both male and female residents of counties surrounding the north–central metropolitan area of Huntsville, Alabama. Huntsville is the second most populated metropolitan area in Alabama. Tested entry–level for Drake trainees averages 7.07, with a good many former high school graduates. Age for Drake trainees ranges from 16 to 55 years.

It should be noted in cases where many high school graduates are included in the trainee sample––such as at Gadsden and Drake––there is considerable variance between reported formal education and tested achievement, ranging in some cases as much as 6.5 or 7.0 grades difference, i.e., trainees report "grades completed in public school" which are much higher than their tested ability, especially in isolated areas such as math or language, etc. No attempt was made by TERC to check the validity of formal educational experiences.

Lively Vocational–Technical School. Trainees are both male and female residents of the counties surrounding the city of Tallahassee, Florida. Entry–level for Lively trainees tested out at an average of 6.8, with ages ranging from 14 to 60 years.

Miami Skill Center (MSC). Trainees are male and female residents of metropolitan Dade County. MSC also services a substantial number of non–English speaking trainees.

Atlanta Area Technical School. Trainees are male and female residents of metropolitan Atlanta and surrounding DeKalb and Fulton Counties, with trainees moving to the area from the rural area of the state as a result of urban migration. The average entry–level is tested at 7.5. Ages range from 16 to 49 years.

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Because of the incomplete reporting of data,* it is difficult to describe the average IMTS trainee in terms of age, race, or even nationality. Age ranges for each site--particularly the ceiling for Indian River--reflect the broad utilization potential of the System, as well as the individuality and adaptability of the treatment it offers.

Prior to November, 1973, the assessment procedures required reporting trainee attendance in *hours* categorized according to requirements for special treatment and grade-level achievement. Data submitted proved to be inadequate for the purposes for which they were intended, i.e., for managing the IMTS and for evaluation. The reporting procedures were revised to include "numbers" of trainees in the categories which would require considerable blocks of staff time. These include: "non-English speaking," "occupational exploratory," "administered TABE (first time)," "new trainees (beginning during the month)," "below fifth-grade achievement," "fifth through sixth grade achievement," and those requiring less staff, "above eighth grade." Staff can use these data, which are reported monthly, to control staff-trainee ratio and time--particularly where trainees requiring one to one initial treatment is obvious as in working with non-English speaking trainees and where large blocks of time are spent administering the TABE.

The data now being reported, reflect a more complete description of IMTS trainees. Unfortunately, these descriptions were not available on the trainees covered in this report.

Assessment Procedures

A *formative* assessment and management (FAM) system was developed to provide a vehicle for effective management of learning behavior associated with IMTS participation, both for trainees and staff. Formative assessment is improvement-oriented in that feedback on performance is used in making management decisions for improving that performance.

The System through its stabilized interlocking components offers a potentially outstanding vehicle for evaluating and managing performance. After trying other avenues, the trainee's Study Schedule (see Appendix E) was determined to be the most effective method of collecting data on trainee performance which, in turn, reflects staff performance in the IMTS.

The Study Schedule is in actuality the prescribed sequence of instructional modules. Estimated hours (to the nearest half-hour increment) are included for each module, as well as spaces for entering module study time (actual time as opposed to estimated), test scores, test times, and tutoring time, if any.

*Forms for collecting these data were instituted early in the project. The sites' lack of cummulative reporting and the lack of TERC staff to retrieve it all is a developmental defect which can be corrected when a model accountability system is imposed on the IMTS and a specific person is assigned this task.

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The Study Schedules for each trainee were requested from each site to provide the project with the summary data included herein. Staff training materials (see *Case Studies 4 and 5*) were developed to instruct staff in using this instrument for evaluating trainee performance and making effective management decisions based upon that evaluation.

Because the formative assessment system was under development during the major portion of the contract period, IMTS staff were plagued by a constantly changing design as the result of tryout and revisions. It should be noted that IMTS staff were uncommonly patient and cooperative during this developmental period and were instrumental in providing the System's final products, *Case Studies 4 and 5*. It might also be noted that these documents and their inherent procedures were developed independently of and differ significantly from the assessment system developed under sub–contract with Program Assement and Management, Inc. (PAM) which is reported by that firm under separate cover: One focused on the amount of time the trainee worked; the other on the amount of achievement which occurred within the amount of time the trainee worked.

In brief, the sub–contractor's assessment tended to revolve around a time–analysis approach adapted from business and industry's time studies. While over–emphasizing time analysis––which is only half of the picture––the importance of achievement tended to be de-emphasized.

IMTS sites had neither sufficient staff nor equipment (time clocks) for the minute by minute recording of time demanded for this approach. And too, the basic method for assessing the academic component had already been designed. The situation could best be described as an over–kill of the academic area assessment.

Exclusive attention to the time–assessment approach and the over–kill in assessing the academic component resulted in a failure to design an adequate assessment system for Complementary Skills, Employability Programs, and the AIMS activities. Therefore, these components still lack the rigorous evaluation facility as has the basic academic component. Several useful management instruments, however, were produced as a result of the research involved in developing a separate assessment component for the IMTS.

Due to the assessment design changes, data reported during most of the contract period were substantially incomplete. Data were categorized, therefore, as follows:

> ***Group I – Complete***, defined as containing pre and posttest scores in all areas (reading, language, and arithmetic), indicating a completed prescription or prescriptions.
>
> ***Group II – Semi–Complete***, defined as containing pre and posttest scores in only one or two areas, such as reading or arithmetic.
>
> ***Group III – Incomplete***, defined as containing either a pre or a posttest score but not both.

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Only Group I data, comprising 43% of the Study Schedules reported, are included in this report. Groups II and III data comprise the remaining 57%.

The following table reflects the percentage of complete and semi– or incomplete data obtained from each site.

TABLE 2

Completeness of IMTS Trainee Data
by Pilot–Demonstration Site
(N = 10)

Pilot–Demonstration Site	Group I		Groups I and II	
	No. of Schedules	%	No. of Schedules	%
Atlanta	85	63	49	37
DeWitt Nelson	0	0	26	100
Drake	57	36	101	64
Gadsden	67	59	46	41
Indian River	54	29	132	71
Lively	104	57	77	43
Miami	25	14	155	86
SRCC	0	0	9	100
Ventura	54	68	26	33
YTS	21	81	5	19

Five sites (50%) yielded better than 50% usable data while two sites (20%) had no usable data at all. It must be emphasized that Groups II and III data would yield results, though certainly not conclusive results, had TERC time and staff been sufficient for laboriously tabulating and analyzing them. For instance, Group III data (partially completed prescriptions) could provide an internal check on performance on individual modules. However, this sort of analysis would only yield trends for the individual. While these data (Group III) do not supply effective summary analyses, they are precisely at the stage where site staff have been trained to pay close attention to them. That is, if trends on the first five or so modules indicate the trainee is experiencing difficulty, some intervention is necessary *immediately*, not after his pre to post–TABE change indicates very little or no achievement or even a loss. This is, in the truest sense, formative assessment and management.

The two CYA sites yielding no usable data at all required considerable technical assistance in working out implementation problems which were unique to their setting.

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For example, Southern Reception Center and Clinic (SRCC) is a holding facility for all schools under the Authority, as the name applies. CYA wards come into the Center and are evaluated by Center staff not IMTS staff in terms of behavior, offenses, and special needs. Their longest stay--unless they are to receive psychological treatment--runs about 60 days maximum before they are assigned to a specific CYA school. During the time SRCC was setting up an IMTS, only three CYA schools had an IMTS operating: Ventura, YTS, and DeWitt Nelson (which was having its own problems with integrating the IMTS into the existing program and in providing appropriate space).

Through the technical assistance feature, "problem solving," SRCC staff were trained to develop a transitional prescription with trainees assigned to the three other CYA sites operating the IMTS. They were also provided with "special" prescribing skills for those trainees who were not assigned to another IMTS site and were not able to complete their prescriptions while at SRCC. These included a prescription concentrating on the area of greatest need and sending the diagnosis and record of the partially completed prescription to the assigned facility.

In addition to the scheduling problems, SRCC had a concurrently running "token economy" program for emotionally disturbed students within the institution and separate from the IMTS. TERC staff advised including the IMTS in the "token economy" program so that IMTS participation would not stand out as being nonreinforcing and, most especially, to avoid damaging competition among the various SRCC programs.

Technical assistance for these two sites became an apparent need when TERC began receiving data from all CYA sites. Data from these two sites were either non-existant or very incomplete. In conjunction with these two site visits, technical assistance was also provided to YTS and Ventura for the purpose of retraining in the management and evaluation procedures associated with the finalized training products, Case Studies 4 and 5.

The incomplete data was the stimulus for providing technical assistance and retraining of lesser degrees to all of the sites. These data were also extremely instrumental in indicating the content and format of the finalized training products. However, it was not until the full enrollment of fall (1973) that these specific needs became obvious. It should be noted that incoming data since that time has approximated 100% completeness.

For the foregoing reasons, this report will be concerned with only the eight sites from which data were available in sufficient proportions in time to be tabulated and analyzed. The trends from this portion (43%) of data tend to hold consistent with incoming 1974 data, though considerably more time would be required in presenting them here.

Indices of Trainee Performance

A great deal has been said in this report about managing trainee performance. Indeed, any evaluation of the staff training conducted under this project would necessitate looking at how well trainees perform under the system which staff had been trained to establish and operate. In order to manage performance, one must be able to

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look at the starting point, design and implement treatment, change the treatment if indicated, and check the completion against the starting point in order to determine if the treatment was effective and, if so, was it as effective as one had intended it to be. The starting and completion points are evaluation instruments; the in–between is management.

The index measuring the change from start to completion in the IMTS is the change in achievement scores from pretest to posttest, with intervening instructional treatment (the IMTS). The management indices are efficiency rates (performance on modules) and learning rates (performance on modules in terms of time it actually takes to complete an estimated time increment of instructional work.)

Pre to Post Training Change in Achievement as measured by scores on the *Tests of Adult Basic Education (TABE)* is the most basic index of trainee performance. The standardization of the TABE, as well as consistent intervention (the IMTS) afford significant opportunities for comparing trainees across and within IMTS sites.

The TABE was chosen as the diagnostic instrument for the IMTS for several reasons. The TABE has a locator test based on vocabulary which pin–points performance over a wide range of achievement levels (elementary, intermediate, and secondary). It is easily and quickly scored on site––many other achievement tests must be scored by the publisher.

The IMTS has continuously made maximum use of whatever materials are available on the market. While the TABE leaves a good bit to be desired in terms of completeness, there is no better criterion–referenced test available at this time.

The TABE is an adult–oriented, multi–level instrument which produces a grade placement norm for the areas of reading, arithmetic, and language. The E–level is designated *Easy* and corresponds to the California Achievement Test (CAT) administered to fifth–grade school students. (The CAT is usually administered at the close of the preceding year, in this case, fourth grade.) The M–level, *Medium* corresponds to the CAT administered to eight–graders. The D–level, *Difficult,* corresponds to the CAT administered to eleventh–graders. The score ranges, by area, appear in the following figure:

SUBTEST	E LEVEL		M LEVEL		D LEVEL	
	Low	High	Low	High	Low	High
Reading Vocabulary	1.0	5.0	2.0	9.0	3.0	12.8
Reading Comprehension	1.3	5.0	2.0	9.5	3.0	13.0
Total Reading	1.0	5.0	2.0	9.6	3.0	13.0
Arithmetic Reasoning	1.0	5.0	2.2	8.5	3.8	13.0
Arithmetic Fundamentals	1.0	5.0	2.2	9.7	3.7	13.0
Total Arithmetic	1.0	5.0	2.0	9.0	3.0	13.0
Mechanics of English	N/A	N/A	2.0	9.0	3.0	13.0
Spelling	N/A	N/A	2.0	10.0	3.3	13.0
Total Language	N/A	N/A	2.0	10.0	3.0	13.0
TOTAL BATTERY	N/A	N/A	2.0	10.0	3.0	13.0

Fig. 5. Grade Placement Score Ranges for the TABE

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The pretest and posttest scores used in this report reflect an overall (reading, arithmetic, and language) grade placement based on a national norm. This is a matter of convenience; i.e., simply to give a quantitative figure from which to work. It is conceivable that a trainee could score around third–grade achievement in arithmetic but score considerably higher in reading and language producing an "unreal" overall grade placement, especially, if his occupational training hinges on arithmetic skills.

It should also be emphasized that any person competing in today's labor market would be considered disadvantaged when performing at any point on the E or M–level range and certainly the lower range of the D–level.

Learning Rate. The ratio of the actual time a trainee takes on prescribed material to the estimated time for that material yields his *rate of learning.* In an individualized learning situation, however, this measure must be approached with a great deal of caution. Learning rates can be expected to increase primarily due to the built–in reinforcing elements of the individualized instruction. Even greater increases could be expected should contingency management intervention be imposed further on the System. However, the multitude of variables––the simultaneously increasing difficulty of materials, learning area preferences, etc.––which can occur without and even within a controlled environment can play havoc with learning rates. The greatest caution, though, is against "pushing" or "begging" increases in learning rates in a program designed to allow individuals to progress at their own pace. For instance, trainees could come to feel unnecessary pressure to learn "fast" or "faster." Such a situation could reintroduce traditional hazards of learning such as peer pressure, dropout, etc., which individualization of learning seeks to avoid.

Efficiency Quotient (EQ). The efficiency quotient or ratio of the number of tests passed to the number taken is possibly the most sensitive measure of performance in terms of IMTS management, dealing as it does with module evaluation. There are only two forms (A & B) of the modular tests. A trainee can conceivably take each form at least twice (more would yield negligible results), and a certain amount of "test–learning" takes place. The EQ will point this out handily. For example, a trainee takes nine module tests for six modules; i.e., he finally passed modular tests for all six modules indicating completion of same. This trainee is operating at about 2/3 efficiency, determined by substituting in the formula, No. of Tests Passed/No. of Tests Taken X 100 = EQ, i.e., 6/9 X 100 = 66.6% = 67%.

What does this say, necessarily?This figure (2/3 efficiency or 67%)––designed to be computed frequently––indicates a slight performance problem for the trainee. Staff must examine this performance more closely as the following management strategies excerpted from the Operating Guide suggest:

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1. Complete the checklist for auxilliary trainee tasks which do not require contracting. Based upon checklist results, institute the appropriate strategy or strategies as follows:

CHECKLIST OF TRAINEE PERFORMANCE ON AUXILLIARY TASKS

TRAINEE PERFORMANCE	YES	NO	STRATEGY
Does trainee respond in writing to module items?			Require trainee to respond to modules in writing and to "hand in" responses prerequisite to taking module posttest.
Does trainee require assistance on module items?			Withdraw assistance while trainee is working on module. Refer trainee to previous portion of module where necessary skill or information is presented.
Does trainee "appear" to rush through module?			Spot-check module responses for accuracy. If inaccurate, have trainee correct responses and request that he work more carefully.
Does trainee keep accurate accounts of time on the module?			Spot-check module work time by recording time trainee "appears" to begin work on a module and the time he "appears" to have completed module (asks for posttest). Check your recorded time with the trainee's recorded time. If differences occur, counsel with trainee on procedures for and importance of recording time.

2. Determine if the trainee will work under a simple agreement contract.

3. If not, determine and record what is reinforcing to the trainee as follows:

   . . . Have him list some of the things, activities, and people privileges that he would be willing to work for. Remind him of his participation in the AIMS program and have him draw on that experience in developing the list.

   . . . Go over the list with the trainee and cull items and/or privileges which you cannot deliver.

(Continued)

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Often the performance can be solved without contracting specifically for improved EQ. If the problem appears to be technical, i.e., one which the trainee cannot control, contracting for improved EQ would be pointless.

Staff are trained in specific procedures for systematically using a behavioral observation checklist to identify behaviors which would indicate a problem with a reading level, the rate of development of concepts, and/or the relevance of the materials and in developing strategies to treat any or all of the identified problems.

If the problem is identified as strictly trainee–oriented (lack of motivation, interest, etc.), staff are trained to isolate the specific index for treatment. An example of this procedure is again excerpted from the Operating Guide:

TASK	E–4 Evaluate Trainee Progress Using Efficiency Quotient
GIVENS	• Trainee's Study Schedule with at least five completed modules.
PROCEDURE	1. Compute trainee's EQ by counting the number of module posttest the trainee has passed (84% or better) and the number of module posttests he has taken and substituting in the formular:

$$\frac{\text{No. of Tests Passed}}{\text{No. of Tests Taken}} \times 100 = \text{EQ}$$

EXAMPLE:

	Module Test Grade				Tuto. Time
	Attempt No.				
	Pre	1	2	3	
		76	82	88	
		69	88		
		46	76	92	
		89			
		76	96		
		57	80	87	
		82	88		
		68	70	86	
		92			
		86			
		88			

(No. of Posttests Taken) 22 | 11.00 (No. of Posttests Passed)

.50 (E.Q.)

.50 X 100 = 50% EQ

2. Using the Study Schedule, define the existing behaviors:

   First Attempt Passing
   Second Attempt Passing
   or Third Attempt Passing

3. Define the desired behavior:

   Criterion

   EQ should approximate 100% at optimum level.

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PROCEDURE

4. Establish an approximation to the desired behavior.

   EXAMPLE:

   EXISTING BEHAVIOR (EQ Performance) = 33% or third attempt passing

   DESIRED BEHAVIOR = 100% or first attempt passing

   APPROXIMATION TO DESIRED BEHAVIOR = 50% or second attempt passing

5. Negotiate contract with trainee for approximation to desired behavior (as specified in Task M–6), specifying time for achievement.

   EXAMPLE:

   PERFORMANCE CONTRACT

   Trainee: John Robarts Date: 7/24/73

   Goal: EQ approximates 50% (Second attempt passing)

   Immediate Reinforcer: 10 minutes free time for each test passed on second attempt OR 5 points toward long–range goal

   Long–Range Reinforcer: An hour off class other than the formal break

   End of Contracting: When EQ for the next 5 modules is over 50%

   Check Date: Friday, 7/28/73

6. Evaluate achievement promptly according to terms of the contract (usually weekly).

7. Trouble shoot (evaluate EQ for each module) during contract period using the Contingency Contracting Checklist (Task M–6).

8. Renegotiate contract until desired behavior (100% EQ performance) is achieved.

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RESULTS

Staff Training

Orientation and Establishing Workshops. During Phase II, two separate workshops were conducted for combined staff in each state, Florida and California. These workshops covered a period of three days each (one for orientation and two for establishing.) The following figure reflects the number of participants for each workshop series in each state.

STATE	ORIENTATION	ESTABLISHING
Florida	14	8
California	29	30

Fig. 6. Participants in Phase II Orientation and Establishing Workshops

Reports on the outcomes of these workshops were submitted to the project's funding agency state and local officials, and workshop participants.

Operating Workshops. Operating workshops were conducted for each Phase II pilot–demonstration site. Staff from the four California sites met together for three days of group activities, followed by two additional days of individual training at each site. The number of participants is reflected by site in the following figure.

PILOT–DEMONSTRATION SITE	NUMBER TRAINED
California	
DeWitt - Nelson	8
Ventura	10
Southern Reception Center and Clinic	4
Youth Training School	24
Other (CYA administrative and research personnel)	7
Florida	
Indian River Community College	8
Miami Skill Center	9
CCU participants	2
State Personnel	1

Fig. 7. Participants in Phase II Operating Workshops

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A total of 43 IMTS staff members and related personnel were oriented to the IMTS; 38 were trained to establish an IMTS; and 73 were trained to operate the IMTS. Training dates are as follows:

Florida Orientation and Establishing	July 18–21, 1972
California Orientation and Establishing	September 12–14, 1972
Indian River Community College Operating	November 27 – Devember 1, 1972
California Youth Authority Schools Operating	January 29 – February 14, 1972
Miami Skill Center Operating	March 8–11, 1973

Reports on individual workshops are available upon request from the TERC office.

Trainee Performance

As previously mentioned, the project was able to retrieve 43% of the data yielding pre to post performance for trainees at 80% (8) of the pilot–demonstration sites. These data, however significant in yield, lose a good bit of their meaning for individual sites in that they bear no clear–cut relationship to the time over which these changes occurred.

In the earlier stages of developing assessment procedures and instruments, staff were trained to record starting and completion dates for individual modules but not by the specific hour (or minutes) spent on the module. For example, a trainee could conceivably start and finish two or three modules on the same day, giving a very inadequate accounting of time per module. Also, weekends, holidays, special permission for other activities interferred with an accurate accounting of hours spent on modules. It soon became apparent that wide variances existed in attendance hours so that calculations from attendance records corresponding to the starting and completion dates for modules yielded gross estimates of hours instead of actual instructional time. This was the status at the end of Phase I.

During Phase II the time–analysis previously described was undertaken. A form, "Monthly Summary of Trainee Performance" was developed which called for recording blocks of time for each component program. Not only did completing this chart increase the paper work for IMTS staff, but there was also no means by which to consider performance unless the Study Schedule for the individual trainee was included. Though capsulized here, the evolution to the use of a single instrument, the trainee's Study Schedule, for assessing performance was a time–consuming process. Therefore, it was only in the last four months of the project that most of the staff began to keep accurate and consistent records of time.

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There was a significant attempt to retrieve data on the basis of the finalized procedures so that data would include actual time per instructional module, including module work time, test(s) time(s), and tutoring time. Unfortunately, the importance of the time factor still has not been equally appreciated by developers and users, and TERC staff were not sufficient in number to retrieve the data alone. Consequently, not all sites reported actual time. The following figure represents quite graphically the difficulty encountered in analyzing pre to post change as it relates to time. But even more difficult, if not impossible, is achieving any kind of learning rate without an accurate and consistent record of time.

PILOT–DEMONSTRATION SITE	ESTIMATED INSTRUCTIONAL	ACTUAL INSTRUCTIONAL	TOTAL ATTENDANCE
Atlanta	X		
Drake	X		
Gadsden			X
Indian River	X	X	X
Lively	X		X
Miami	X		X
Ventura	X	X	
YTS	X	X	

Fig. 8. Time as Reported by IMTS Sites

The four sites operating over the longest period of time (Atlanta, Drake, Gadsden, and Lively) were subjected to more changes in time–keeping procedures, had a greater number of trainees on which to retrieve data kept under earlier procedures, and in the case of Gadsden, had less staff to handle retrieving tasks. In summary, learning rates, which are cautious measures at best, could be computed for those three sites (Indian River, Ventura, and YTS) supplying the necessary data (estimated and actual instructional time).

Efficiency of learning is a measure of performance during intervention via module tests. By the criteria established for Group I data, these data were available for analysis at the same proportion as were the pre to post change data, with the exception of Gadsden. Module test scores were unavailable for that site.

Progress Toward Implementing the Total IMTS

At the outset, it is interesting to note this measure as it relates to implementation of the various IMTS components. (Implementation and intentions of implementation are discussed in a later section, IMTS Impact.) Lively and YTS come nearer to 100% IMTS implementation than do the other sites as indicated in Table 3, though these figures are already changing as additional monies become available. Ventura, for instance, has just been able to purchase the materials necessary for implementing the reading component.

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TABLE 3

Implementation of IMTS Components
Across the Ten Pilot–Demonstration Sites

Pilot–Demonstration Site	COMPONENT PROGRAMS					
	Reading	Arithmetic	Language	Occupational Exploratory	Comp. Skills	Pre–vocational
Atlanta	X	X	X			
DeWitt Nelson	X	X	X	X		
Drake		X	X		X	
Gadsden	X	X	X		X	
Indian River	X	X	X			X
Lively	X	X	X	X	X	
Miami	X	X	X		X	
SRCC		X	X			
Ventura		X	X		X	
YTS	X	X	X	X		X

Pre to Post Change in Achievement

Because Gadsden reported only total attendance time, the basic data reflecting change in IMTS trainee achievement from pre to posttest as measured by the TABE are reported for all sites reporting "total attendance hours," i.e., total time trainees spent in the LRC, in Table 4.

The most significant outcome to be extracted from these data is that 100% (67/67) of the Gadsden trainees increased in grade level from their entry levels to their exit levels. The average increase for Gadsden was 65%. All trainees gained at least 1.0 grade levels and did so at the rate of .026 grade per hour.

Another outstanding reflection from Table 4 is the consistency among the three remaining sites, Indian River, Lively, and Miami. While the number gaining from each site was not as great as the number gaining at Gadsden, the rates at which trainees gained is almost constant, .0076, .0072, and .0077 respectively. Again, it must be noted that these rates are based on total attendance hours.

The data reflected in these tables are presented for the purpose of looking at trainee performance at all pilot–demonstration sites. They are presented together as they reveal the near–consistency of trainee performance and not for any comparative analysis.

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TABLE 4

Distribution Statistics for Total TABE Battery Change Scores*
Across All TABE Levels (E, M, and D)
Gadsden, Indian River, Lively, and Miami Separately

Statistic	Pre	Post	Change	% Change	Total Attendance Hours	Grade Gain Per Hour
GADSDEN (N = 67)						
Mean	7.08	11.69	4.62	65	175.57	.0260
Range	4.5 – 9.8	9.1 – 13.0	1.0 – 6.8		40 – 473	
No. Gaining	67/67 = 100%					
INDIAN RIVER (N = 46)						
Mean	7.55	9.18	1.46	22	191.78	.0076
Range	3.4 – 12.1	4.2 – 13.0	(–.2)–(+5.0)		60 – 831.5	
No. Gaining	42/46 = 91%					
LIVELY (N = 100)						
Mean	6.76	7.82	.91	16	126.85	.0072
Range	3.6 – 10.4	4.0–12.5	(–.3)–(+3.3)		8 – 633	
No. Gaining	93/100 = 93%					
MIAMI (N = 25)						
Mean	8.28	9.14	.93	10	121.0	.0077
Range	5.3–11.8	5.7–12.5	(–.3)–(+2.2)		40 – 226	
No. Gaining	22/25 = 88%					

*In reference to Tables 2, 3, and 4, it should be noted that some trainees may have lost on the initial prescription but eventually they do gain. The IMTS is not claiming that there is any such thing as a teacher--or student--proof system. There will be tough individuals and probably some unknown variables.

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Table 5 reflects the pre to post change for the three sites which reported actual instructional time: Indian River, Ventura, and YTS.

TABLE 5

Distribution Statistics for Total TABE Battery Change Scores
Across All TABE Levels (E, M, and D)
Indian River, Ventura, and YTS

Statistic	Pre	Post	Change	% Change	Actual Instructional Hours	Grade Gain Per Hour
INDIAN RIVER (N = 46)						
Mean	7.55	9.18	1.46	22	92.25	.0160
Range	3.4–12.1	4.2–13.0	(–.2)–(+5.0)		5–411.5	
No. Gaining	42/46 = 91%					
VENTURA (N = 54)						
Mean	7.86	8.73	.84	11	48.43	.0173
Range	5.3 – 11.1	5.5 – 12.1	(–.4)–(+2.9)		8–111	
No. Gaining	50/54 = 93%					
YTS (N = 21)						
Mean	6.17	6.86	.695	11	26.95	.0258
Range	5.0 – 7.5	4.9 – 9.0	(–.3)–(+2.5)		8–50	
No. Gaining	17/21 = 80%					

Again there is a considerable degree of consistency among sites in terms of trainee achievement.

The basic data for change based on *estimated* instructional hours are reported for all sites excluding Gadsden (for which estimated hours were not available) in Table 6.

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TABLE 6

Distribution Statistics for Total TABE Battery Change Scores Across All TABE Levels (E, M, and D) Reported Separately for Seven IMTS Pilot–Demonstration Sites Reporting Estimated Hours

Statistic	Pre	Post	Change	% Change	Estimated Time	Grade Gain Per Hour
ATLANTA (N = 81)						
Mean	7.51	8.27	.78	10	63.45	.0261
Range	3.1–12.1	4.1–12.7	(–.8)–(+4.6)		4–97	
No. Gaining	73/81 = 90%					
DRAKE (N = 56)						
Mean	7.07	8.26	1.15	17	33.88	.0339
Range	5.0–9.0	6.0–10.0	0–3.0		5.5–116	
No. Gaining	45/56 = 80%					
INDIAN RIVER (N = 46)						
Mean	7.55	9.18	1.46	22	37.45	.0390
Range	3.4–12.1	4.2–13.0	(–.2)–(+5.0)		3.5–117.5	
No. Gaining	42/46 = 91%					
LIVELY (N = 100)						
Mean	6.76	7.82	.91	16	13.48	.0675
Range	3.6–10.4	4.0–12.5	(–.3)–(+3.3)		1.5–55	
No. Gaining	93/100 = 93%					
MIAMI (N = 25)						
Mean	8.28	9.14	.864	10	37.82	.0228
Range	5.3–11.8	5.7–12.5	(–.7)–(+2.2)		5–69.5	
No. Gaining	22/25 = 88%					
VENTURA (N = 54)						
Mean	7.86	8.73	.84	11	41.13	.0190
Range	5.3–11.1	5.5–12.1	(–.4)–(+2.9)		12.5–158.5	
No. Gaining	50/54 = 93%					
YTS (N = 21)						
Mean	6.17	6.86	.695	11	25.02	.0278
Range	5.0–7.5	4.9–9.0	(–.3)–(+2.5)		10–51	
No. Gaining	17/21 = 80%					

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Looking again for consistent trainee performance, 89% (342/383) of the trainees considered in Table 6 showed positive changes in achievement from pre to post.

Across all sites, there is a median gain approaching 1.0. Translated into percentage terms, this change amounts to about 17%. While the average percent gained is not great, it must be viewed in the context of extremely high trainee consistency. Across all sites 91% (409/450) of the IMTS trainees increased their educational levels. Since the ultimate focus is on the disadvantaged *individual*, this outcome is of great import.

Estimated instructional time represented in Table 6 varies over a range from 1.5 to 158.5 hours. The appreciable educational gains made by most trainees were accomplished in relatively short time periods, again confirming the efficiency and effectiveness of the training system.

Grade gain per hour is a complex unit of measure and one not easily comprehendable. The last column for each of the sites indicates that for every estimated hour invested, trainees gained three–hundredths of a grade on the average. Thus, the findings with this index of learning rate are consistent with the outcomes of other indices. Learning rate can be a particularly sensitive index of educational achievement but the measure requires rigorous, systematic recording.

Most of the trainees entering the IMTS at a very low achievement level have reading difficulties and cannot perform at all on the TABE. This is indicated to staff immediately when the trainee attempts a vocabulary test, the TABE Locator, which was designed for placement on the appropriate level of the TABE. These trainees, as well as non–English speaking trainees, work primarily toward learning to read. Once they have learned to read, they usually score above the E–level ceiling but in the lower range of the M–level test.

From experience, TERC staff suspect that many of the lower M–level trainees included in Table 7 are actually E–level performers but for some undetermined reason were placed at the M–level.

Table 7 reflects that in most instances where trainees enter the IMTS at M–level achievement, the greatest gains occur in the M to D level range. This means that trainees entering at M–level achievement make their greatest gains when moving up to D–level. The two trainees who stand out in the Indian River sample (Change Score of 4.05) made these increases from a low–level (E) entry to a high–level (D) exit. Highest changes are expected from level changes.

Again, Gadsden is an exception with highest changes occurring at the M–level. It should be noted that Gadsden retests within the same level so that trainees are level stabilized. Though no clear–cut cause–and–effect relationship is identifiable, this procedure could account for the very large degree of change experienced by the Gadsden site.

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TABLE 7

Number of IMTS Trainees Gaining from Pre to Posttest and Average Change Scores Across All TABE Levels for the Eight IMTS Pilot–Demonstration Sites

INDEX	TABE LEVELS					
	E	E–M	E–M–D	M	M–D	D
ATLANTA						
Change Score	.30	1.45	1.00	.49	1.74	.72
No. Gaining	1/1	2/2	1/1	23/29	10/10	36/38
DRAKE						
Change Score				.50	1.70	.92
No. Gaining				5/10	21/22	19/24
GADSDEN						
Change Score				5.26		2.71
No. Gaining				51/51		16/16
INDIAN RIVER						
Change Score		1.10	4.05	1.00	2.25	1.32
No. Gaining		2/2	2/2	6/6	10/10	22/26
LIVELY						
Change Score	0	1.00		.57	1.86	.54
No. Gaining	0/1	1/1		31/36	27/27	34/35
MIAMI						
Change Score				.50	1.50	.76
No. Gaining				3/4	5/5	14/16
VENTURA						
Change Score				.38	1.73	.84
No. Gaining				10/12	6/6	34/36
YTS						
Change Score				.52	1.43	
No. Gaining				13/17	4/4	

Significant changes also occur within the D–level. Site staff have reported the D–level TABE to be "easier" than the M–level. Empirical evidence would indicate that D–level collects more trainees with "refresher" needs while M–level collects those needing initial skill training.

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It is noteworthy that the average M–level grade gain; excluding Gadsden, is approximately .5. This figure is to be compared with one of .85 for D–level. The proportion of trainees gaining is quite comparable at the M and D levels, ranging from 50% to 100% with a mean of approximately 88%. In other words, most trainees showed gains that indicate a highly effective training system.

Learning Efficiency

The efficiency index addresses the question, "How efficient is trainee learning on instructional modules?" Or, perhaps better stated, "How do the number of attempts at module tests affect accomplishment and retention of the basic skills taught via the instructional modules?"

A trainee who is accustomed to being tutored to a passing grade on a series of module tests might experience a good bit of difficulty when left to his own ability, as he would be in taking the TABE. One could therefore expect from him a loss in pre to post change or, at best, no change.

Since tutoring is a procedure to be implemented only after failure on the second attempt at the module posttest, any pattern developing could be detected and treated before the trainee experiences failure in overall achievement. The only way the IMTS can guarantee success for each trainee is to maintain a constant check on the trainee's performance throughout his prescription and to make appropriate alterations to that prescription and/or to institute treatment designed to increase trainee motivation and performance.

The hypothesis, then, underlying the use of the EQ index is that trainees who perform efficiently in the skills taught in instructional modules over short periods of time have greater retention and show greater achievement over a longer period (from pre to posttraining). Basic to this hypothesis are the substantial average EQ scores for the sites reported in Table 8.

TABLE 8

Average Efficiency Quotients
for Seven IMTS Pilot–Demonstration Sites

Pilot–Demonstration Site	Average EQ
Atlanta	88
Drake	78
Gadsden	Data Unavailable
Indian River	70%
Lively	73%
Miami	89%
Ventura	68%
YTS	78%

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All sites show trainees performing on the average at better than 50% efficiency, with six of the seven at 70% and above. While none approximate 100% (desirable), these EQ's are particularly high in that staff had not yet been trained in specific techniques for producing a positive change in EQ at the time these data were collected.

It is interesting to note that Ventura staff independently instituted a contingency management program directed at improving EQ. When TERC staff visited the site in late October, 1974, a large chart was evident on which appeared the name of each trainee passing a module test on the first attempt. A large gold sticker indicated a second, third, etc. success. If five successive tests were passed, a different shaped sticker so indicated. All trainees were on the chart which was gaily decorated in addition to its content. Two trainees were obviously racing, having almost reached the extremities of the chart and having passed 26 and 28 successive module tests on the first attempt.

Trainees were interviewed as to their individual reactions to this method of rewarding learning success. The program took on the spirit of a friendly intra–squad skirmish for the most part. Interestingly, those trainees who verbalized only slight interest were quite effective in pointing out their particular status, offering full explanation thereof. Perhaps, there is indeed a bit of wisdom in the trite, but tried, adages––"Behavior speaks louder than words," and "Learning can be fun."

There is no implication here that trainee reaction was systematically analyzed. It is apparent, however, that IMTS staff are establishing themselves as behavioral change agents.

In summary, examination of the three indices of trainee performance across all sites indicate a rather large scale impact of the systematic training offered via the IMTS. Certainly the results are tentative rather than conclusive due to the problems associated with the developmental nature of the project but do, nonetheless, support the effectiveness of the IMTS as a training vehicle for staff and trainees alike.

IMTS Impact and Utilization

Administrators of the ten pilot–demonstration sites were interviewed via a specifically designed interview guide in order to survey the impact of the IMTS on the state, the institution, and/or surrounding community. By position the interviewed administrators include: Supervisors of Education, Supervisors of Academic Instruction, Community College, Associate Dean, Skill Center Director, Vocational–Technical School Associate Director. All interviewees are either directly responsible for the IMTS or substituting for the person who is.

Interviews of the four CYA administrators were conducted by CYA/IMTS monitors who have participated in the staff training and are knowledgeable in IMTS concepts and procedures. The remaining administrators were interviewed by a member of the TERC staff. A separate report of interview results in their entirety may be found in Appendix F. This report deals with additional comments made by administrators. For the sake of brevity here, a summary of specific responses follows.

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In examining the responses, it becomes obvious that a good many questions deal with attitudes toward the IMTS and evaluation of specific components and materials rather than with the impact of the System. This was a highly probable outcome as time limitations hindered the normal tryout and revision procedures to which other IMTS instruments had been subjected. Though such information may be useful in future refinement of the System, the emphasis here is on what establishing the IMTS has meant to the state, institution, and/or local community.

Generally, the more positive statements come from the administrators of the older sites who had had a longer period over which to count the benefits of the System by collecting supportive data of their own. They were therefore in a better position to justify the use of the System.

Fifty percent of the sample reported the ability to serve trainees whom they were formerly unable to serve. It should be noted that while the mentally retarded and the severly emotionally and/or mentally disturbed can certainly be considered disadvantaged, the IMTS was not developed for these population groups. Disadvantaged must hold to the areas of economic and education deprivation. The system has been used with mental retardates and the emotionally disturbed on a very small scale as at the SRCC and Lively sites but certainly not as isolated treatment. Supportive data on the results of this use are not yet available.

Other benefits reported include: higher grade level gains for IMTS trainees than trainees in other similar programs (70%); a data collection system sufficient to meet the needs of the institution (100%), state officials (100%), and the state legislature (70%); better course decisions (70%); faster trainee progress (70%); and expanded services (90%).

It appears where there is complete administrative support for the System, there is greater staff support. One interviewee noted the importance of an institution going into the IMTS "wholeheartedly or leaving it alone" as all supporting resources of the institution are needed.

In reporting promotional activities undertaken by the institution and related to the IMTS, the following were included: open houses; newspaper ads and articles; tape/slide presentations made in the community; in-service training for staff and faculty members; fliers and leaflets distributed on the campus, in college magazines, and school papers; IMTS orientations provided to educational institutions; and inclusion of the System in a televised film of the school. Obviously, some time and effort has been expended in promoting the System.

Significant plans have been made to replace existing programs with the IMTS. One site will be replacing the GED preparatory program; three sites will be substituting the IMTS for existing adult education programs; two will replace their high school credit courses; four, remedial reading; four, remedial math; four, remedial language; two, occupationally related instruction; one, English as a Second Language; and one, their occupational evaluation and guidance program.

Specifically, Lively is expanding the IMTS into two additional buildings and increasing the number of trainees. They are already operating at night.

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Indian River is increasing their operating time to include Saturdays; then, too, are already operating at night. They are also moving into larger facilities.

Miami Skill Center staff has integrated new individualized materials in the Prescribing Catalog which was helpful in TERC's revision of the Catalog. In addition, they are using academic games as reinforcing events attached to trainee performance.

Ventura is adding the reading component to their IMTS, and YTS is planning to expand the Complementary Skills component.

At the state level, California is designing, implementing, and monitoring a computer analysis component for evaluation purposes. Florida plans to design and implement a state–wide computerized accountability system for the IMTS.

Utilization of the IMT System has expanded beyond the ten pilot–demonstration sites as follows:

Florida:	St. Augustine Technical School Lake City Community College Blanche Ealy Adult Center Seminole Community College Brooksville Adult Center Beggs Prevocational Center Big Cypress Seminole Indian Reservation
Massachusetts:	Roxsbury Community College Bristol Community College Springfield Technical Community College Quinsigamond Community College
California:	Karl Holton School (CYA)
Oklahoma:	Kiamichi Area Vocational–Technical Schools (1) McAlester (2) Poteau (3) Hugo

Still another Florida site has been funded this year in addition to the six above now operating; six more are planned for next year, including a second Indian Reservation.

The Universities of West Florida and South Florida have been responsible for the staff training at the new sites in Florida. In addition, teacher educators from Oklahoma State University, California State University, University of California at Los Angeles (UCLA), and the California Division of Vocational Technical Education are being trained to provide IMTS staff training in their respective spheres. At present, the number of staff this utilization entails is not definitive. With the ever–expanding utilization of the IMT System, the need for a nationally applicable accountability system becomes all the more critical.

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CONCLUSIONS AND RECOMMENDATIONS

The long-range objective of this developmental project was to increase the number of qualified personnel who can establish and operate an individualized system of delivery of basic remedial education, occupational exploration, and prevocational training. The objective was accomplished through a series of workshops designed and conducted for that purpose using individualized staff training materials developed during the project. The effectiveness of that training is reflected in the number of trainees whose knowledge and skill levels were appreciably enhanced as indicated by the trainee achievement data. Noteworthy is the fact that these findings emerge despite large site variations in staff, trainees, implementation of procedures, findings, environmental settings, and administration.

The impact, however, is conditioned by the weaknesses in recording and reporting data which have been discussed at great length. TERC recognizes that longitudinal follow-up is necessary for assessing the total impact of the System, as well as to generate improvements in it.

A considerable library of multi-media staff training materials and assessment instruments have been developed, field-tested, revised, and packaged including individualized instructional modules dealing with specific procedures and guides to operating the various component programs. A number of descriptive pieces, including a brochure with photographs, have been developed. Others are forthcoming, and a self-directed study program for staff has been designated to provide staff with the fundamental concepts and technology upon which the System was constructed and implemented.

At present, 9 coordinators, 22 learning managers, 18 assistant learning managers and aides, and 3 clerks have been so trained. In addition, members of the Consortium of Colleges and Universities were trained so that they could take over the responsibilities of training potential IMTS staff in the respective states.

Effective as the IMT System is, however, room does remain for refinement. For instance, more detailed analysis is needed on the relative effectiveness of component programs. Reading, which is basic to other components, warrants special analytical attention. As another case in point, guidance programs may be implemented most effectively by a trained counselor. And, systematic record-keeping via a time recorder greatly facilitates the implementation and effectiveness of any system including the IMTS. In this regard and several others, staff training and motivation have been critical factors.

As mentioned earlier, IMTS staff were subjected to a number of changes in the recording procedures during the development of the management and evaluation staff training materials. Since these procedures have been codified in *Case Studies 4 and 5*, most staff have reported verbally a better understanding of the procedures, in terms of their need for having data to back up management decisions and for evaluating trainee needs and accomplishments.

In this vein, the earlier established procedures of assigning one staff person (preferably a person trained in either system management or record-keeping) primary

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responsibility for collecting and coordinating data at each site is vital. IMTS procedures are now consistent and offer vast potential in accounting for educational outcomes; so much so that the System, as a vehicle for accountability, needs little more than continuous updating and tryout for the purpose of keeping materials current and usable. However, unless the implementation of System procedures is as consistent and systematic as the delivery system itself, the accountability potential will be lost.

The situation seems ripe now in several places to demonstrate the feasibility of an accountability system based on IMTS staff operating the System as it should be operated and the comprehensive effect on students who had had the benefit of education. If and when this is done, it will be the first solid benchwork done for any system. And once this is done, the established accountability system can provide a firm base for a state–wide (for states using the IMTS) monitoring system to coordinate a continuation of data collection critical to up–dating accountability, follow–up, and comparative analyses of the IMTS and other comparable programs.

In addition, the development of the IMTS thus far points to the need for truly individualized and systematic occupational training comparable to other IMTS components. The one prototype occupational cluster, *Internal Combustion Reciprocating Engine Repair,* which has been developed by TERC should be tried out and refined to the point where it could serve as a model in developing the procedures for integrating materials appropriate for individualized instruction in other occupational clusters. The evaluation and selection of available individualized materials would be based on the established IMTS criteria. Once materials are selected they could then be integrated into the various training courses by correlating them to task analyses or course outlines as prerequisite, related, or skill instruction.

A coordinated effort through the network of federally funded Office of Education curriculum laboratories would reduce the amount of duplication of effort which has contributed to an increase in the national cost of providing curriculum planning and development. A utilization plan should be designed for a future project that would make the products from this project available through well–organized training workshops. To make this possible a multi–media presentation should be developed for orientations to administrators and others. In addition, printed and multi–media training modules with simulated activities should be developed for the training of teacher educators and instructors responsible for implementation. If these products can be developed as the result of field test, the basic system will have been developed and refined so as to be available as a guide for development and tryout in other occupational areas.

The direction has been and continues to be toward development of a truly individualized training system designed to produce effectively trained personnel for the labor market––and to do so by producing effectively trained staff who can competently perform the tasks involved.

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APPENDIX A

Trainee Data

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TABLE A

Distribution Statistics for Pre to Posttest
Change Scores Separately by TABE Levels
for IMTS Trainees at Atlanta Area Technical School

Statistic	Pretest	Posttest	Change Score	Estimated Time in Hours	Ratio (Gain per Hour)
Pre and Posttest: Level E (N = 1)					
Mean	3.80	4.10	.3000	21.50	.0140
Range	–	–	–	–	–
t = –	df = –	p = –			
Pretest: Level E – Final Posttest: Level M (N = 2)					
Mean	4.25	5.70	1.4500	26.00	.0558
Range	4.2 – 4.3	5.0 – 6.4	.7 – 2.2	14 – 38	–
t = 1.93	df = 1	p = .1542			
Pretest: Level E – Final Posttest: Level D (N = 1)					
Mean	3.10	4.10	1.0000	61.50	.0163
Range	–	–	–	–	–
t = –	df = –	p = –			
Pre and Posttest: Level M (N = 29)					
Mean	6.54	7.01	.4862	21.75	.0224
Range	4.9 – 7.9	4.7 – 8.7	(-.2) – (+2.0)	4–34	–
t = 6.41	df = 28	p < .001			
Pretest: Level M – Final Posttest: Level D (N = 10)					
Mean	6.49	8.23	1.7400	50.00	.0348
Range	4.4 – 8.2	7.0 – 9.6	.4 – 4.6	23.5 – 97	–
t = 4.14	df = 9	p < .001			
Pre and Posttest: Level D (N = 38)					
Mean	8.91	9.60	.7200	30.14	.0237
Range	7.1 – 12.1	7.6 – 12.7	(–.8) – (+2.5)	13 – 70	–
t = 8.30	df = 37	p < .001			

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TABLE B

Distribution Statistics for Pre to Posttest
Change Scores Separately by TABE Levels
for IMTS Trainees at J.F. Drake State Technical Trade School

Statistic	Pretest	Posttest	Change Score	Estimated Time in Hours	Ratio (Gain per Hour)
Pre and Posttest: Level M (N = 10)					
Mean	6.90	7.40	.5000	24.50	.0204
Range	5.0 – 8.0	6.0 – 8.0	0 – 1.0	5.5 – 67.5	–
t = 5	df = 9	p < .001			
Pretest: Level M – Final Posttest: Level D (N = 22)					
Mean	6.13	7.84	1.7000	43.41	.0392
Range	5.0 – 8.0	6.6 – 10.0	0 – 3.0	11 – 116	–
t = 12.46	df = 21	p < .001			
Pre and Posttest: Level D (N = 24)					
Mean	7.75	8.67	.9170	29.06	.0315
Range	6.0 – 9.0	7.0 – 10.0	0 – 2.0	10.0 – 77.0	–
t = 11.01	df = 23	p < .001			

TABLE C

Distribution Statistics for Pre to Posttest
Change Scores Separately by TABE Levels
for IMTS Trainees at Gadsden State Technical Trade School

Statistic	Pretest	Posttest	Change Score	Estimated Time in Hours	Ratio (Gain per Hour)
Mean	6.70	11.90	5.26	206.77	.0250
Median	6.85	12.10	5.40	171.00	–
Range	4.5 – 8.0	9.2 – 13.0	2.7 – 6.8	84 – 473	–
t = 65.42	df = 50	p < .001			
Pre and Posttest: Level D (N = 16)					
Mean	8.30	10.98	2.71	94.13	.0290
Median	8.70	11.10	2.20	80.00	–
Range	6.3 – 9.8	9.1 – 12.2	1.0 – 5.2	40 – 186	–
t = 10.3238	df = 15	p < .001			

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TABLE D

Distribution Statistics for Pre to Posttest
Change Scores Separately by TABE Levels for IMTS
Trainees at Indian River Community College

Statistic	Pretest	Posttest	Change Score	Estimated Time in Hours	Ratio (Gain per Hour)
Pretest: Level E – Final Posttest: Level M (N = 2)					
Mean	3.85	4.95	1.10	31.25	.0352
Range	3.4 – 4.3	4.2 – 5.7	.8 – 1.4	11.5 – 51	–
t = 3.66	df = 1	p = .0330			
Pretest: Level E – Final Posttest: Level D (N = 2)					
Mean	3.95	8.0	4.05	92.25	.0440
Range	3.8 – 4.1	7.2 – 8.8	3.1 – 5.0	80.5 – 104	–
t = 4.26	df = 1	p = .0727			
Pre and Posttest: Level M (N = 6)					
Mean	5.13	6.02	1.00	21.08	.0470
Range	3.8 – 6.1	4.9 – 6.7	.6 – 1.9	3.5 – 40.5	–
t = 4.62	df = 5	p = .0290			
Pretest: Level M – Final Posttest: Level D (N = 10)					
Mean	6.64	9.16	2.25	55.95	.0402
Range	4.7 – 7.3	6.2 – 10.8	1.7 – 4.2	24.5 – 117.5	–
t = 9.0	df = 9	p < .0001			
Pre and Posttest: Level D (N = 26)					
Mean	9.01	10.33	1.32	30.38	.0430
Range	5.9 – 12.1	7.9 – 13.0	(-.2) – (+2.8)	5 – 71.5	–
t = 11.44	df = 25	p < .001			

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TABLE E

Distribution Statistics for Pre to Posttest
Change Scores Separately by TABE Levels for IMTS
Trainees at Lewis M. Lively Vocational–Technical School

Pre and Posttest: Level E (N = 1)					
Statistic	Pretest	Posttest	Change Score	Estimated Time in Hours	Ratio (Gain per Hour)
Mean Range	4.00 –	4.00 –	0 –	31.50 –	0 –
t = –	df = –	p = –			
Pretest: Level E – Final Posttest: Level M (N = 1)					
Mean Range	3.60 –	4.60 –	1.00 –	15.50 –	.0645 –
t = –	df = –	p = –			
Pre and Posttest: Level M (N = 36)					
Mean Range	5.75 4.1 – 7.1	6.33 4.6 – 9.0	.57 (-.3) – (+2.5)	12.46 1.5 – 41.5	.0425 –
t = 7.33	df = 35	p < .001			
Prestes: Level M – Final Posttest: Level D (N = 27)					
Mean Range	6.36 4.4 – 8.0	8.21 6.4 – 10.1	1.86 .2 – 3.3	15.59 2 – 47.5	.1188 –
t = 14.35	df = 26	p < .001			
Pre and Posttest: Level D (N = 35)					
Mean Range	8.28 6.7 – 10.4	9.26 7.1 – 12.5	.54 (-.2) – (+2.4)	11.21 3 – 55	.0479 –
t = 7.27	df = 34	p < .001			

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TABLE F

Distribution Statistics for Pre to Posttest Change Scores Separately by TABE Levels for IMTS Trainees at Miami Skill Center

Statistic	Pretest	Posttest	Change Score	Estimated Time in Hours	Ratio (Gain per Hour)
Pre and Posttest: Level M (N = 4)					
Mean	6.28	6.78	.50	29.25	.0170
Range	5.3 – 7.7	5.7 – 7.7	0 – 1.0	6.5 – 38.5	–
t = 2.0	df = 3	p = .0697			
Pretest: Level M – Final Posttest: Level D (N = 5)					
Mean	7.06	8.54	1.50	43.80	.0340
Range	6.8 – 7.3	7.4 – 9.1	.3 – 2.2	39 – 48.5	–
t = 3.95	df = 4	p = .0088			
Pre and Posttest: Level D (N = 16)					
Mean	9.16	9.92	.76	38.10	.0199
Range	7.5 – 11.8	7.7 – 12.5	(-.7) – (+2.0)	5 – 69.5	–
t = 4.50	df = 15	p = .0002			

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TABLE G

Distribution Statistics for Pre to Posttest
Change Scores Separately by TABE Levels
for IMTS Trainees at Ventura School

Statistic	Pretest	Posttest	Change Score	Estimated Time in Hours	Ratio (Gain per Hour)
Pre and Posttest: Level M (N = 12)					
Mean	5.96	6.32	.38	30.96	.0120
Range	5.5–7.0	5.5–6.3	(-.3)–(+1.0)	14.5–72.0	–
t = 3.51	df = 11	p = .0025			
Pretest: Level M – Final Posttest: Level D (N = 6)					
Mean	6.48	8.32	1.73	63.75	.0270
Range	5.9–7.2	7.8–9.0	1.3–2.4	25.5–101	–
t = 9.44	df = 5	p < .001			
Pre and Posttest: Level D (N = 36)					
Mean	8.73	9.60	.84	46.75	.0180
Range	7.1–11.1	6.8–12.1	(-.4)–(+2.9)	12.5–158.5	–
t = 9.16	df = 35	p < .001			

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TABLE H

Distribution Statistics for Pre to Posttest Change Scores Separately by TABE Levels for IMTS Trainees at Youth Training School

Pre and Posttest: Level M (N = 17)					
Statistic	Pretest	Posttest	Change Score	Estimated Time in Hours	Ratio (Gain per Hour)
Mean Range	6.15 5.0 – 7.5	6.67 4.9 – 8.3	.524 (-.3)–(+1.4)	23.71 10 – 43	.0220 –
t = 5.24	df = 16	p < .001			
Pretest: Level M – Final Posttest: Level D (N = 4)					
Mean Range	6.25 6.0 – 6.5	7.68 6.5 – 9.0	1.43 .5 – 2.5	30.63 18.5 – 51	.0470 –
t = 1.91	df = 3	p = .0768			

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TABLE I

Change Scores vs. Number of Trainees Increasing in Grade Gains at Eight Pilot–Demonstration Sites Separately by TABE Levels

STATISTIC	PRE AND POSTTEST					
	Level: E–E	Level: E–M	Level: E–D	Level: M–M	Level: M–D	Level: D–D
ATLANTA						
Change Score	.30	1.45	1.00	.49	1.74	.72
No. Increasing	1/1	2/2	1/1	23/29	10/10	36/38
73/81 or 90% increased at least .5 of a grade level on the average						
DRAKE						
Change Score	–	–	–	.50	1.70	.92
No. Increasing	–	–	–	5/10	21/22	19/24
45/56 or 80% increased at least .5 of a grade level on the average						
GADSDEN						
Change Score	–	–	–	5.26	–	2.71
No. Increasing	–	–	–	51/51	–	16/16
67/67 or 100% increased nearly 3.0 grade levels on the average						
INDIAN RIVER						
Change Score	–	1.10	4.05	1.00	2.25	1.32
No. Increasing	–	2/2	2/2	6/6	10/10	22/26
42/46 or 91% increased at least 1.0 grade level on the average						
LIVELY						
Change Score	0	1.00	–	.57	1.86	.54
No. Increasing	0/1	1/1	–	31/36	27/27	34/35
93/100 or 93% increased at least .5 of a grade level on the average						
MIAMI						
Change Score	–	–	–	.50	1.50	.76
No. Increasing	–	–	–	3/4	5/5	14/16
22/25 or 88% increased at least .5 of a grade level on the average						
VENTURA						
Change Score	–	–	–	.38	1.73	.84
No. Increasing	–	–	–	10/12	6/6	34/36
50/54 increased nearly 1.0% grade level on the average						
YOUTH TRAINING SCHOOL						
Change Score	–	–	–	.52	1.43	–
No. Increasing	–	–	–	13/17	4/4	–
17/21 or 80% increased at least .5 of a grade level on the average						

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TABLE J

Comparison Statistics of D vs. M Levels
of the TABE for Atlanta Area Technical School

STATISTIC	PRE AND POSTTEST	
	Level D – D	Level: M – M
n	38	29
Mean CS	.72	.49
Range	3.3	2.2
R/N	.0868	.0759
$(R/N)^2$	.0075	.0058
SED	.1153	
t	1.9948	
df	65	
p	.022501	

TABLE K

Comparison Statistics of D vs. M Levels
of the TABE for J.F. Drake State Technical School

STATISTIC	PRE AND POSTTEST	
	Level: D – D	Level: M – M
n	24	10
Mean CS	.917	.5
Range	2.0	1.0
R/N	.0833	.1000
$(R/N)^2$	.0069	.0100
SED	.1300	
t	3.2077	
df	32	
p	.0006871 or $< .001$	

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TABLE L

Comparison Statistics of D vs. M Levels
of the TABE for Gadsden State Technical Trade School

STATISTIC	PRE AND POSTTEST	
	Level: D – D	Level: M – M
n	16	51
Mean CS	2.71	5.26
Range	4.2	4.1
R/N	.2625	.0804
$(R/N)^2$	.0689	.0065
SED	.2746	
t	9.4444	
df	65	
p	$< .001$	

TABLE M

Comparison Statistics of D vs. M Levels
of the TABE for Indian River Community College

STATISTIC	PRE AND POSTTEST	
	Level: D – D	Level: M – M
n	26	6
Mean CS	1.32	1.0
Range	3.0	1.3
R/N	1.2	.22
$(R/N)^2$	.0144	.0484
SED	.2506	
t	1.28	
df	30	
p	.0968005	

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TABLE N

Comparison Statistics of D vs. M Levels
of the TABE for Lewis M. Lively Area Vocational Technical School

STATISTICS	PRE AND POSTTEST	
	Level: D – D	Level: M – M
n	35	36
Mean CS	.54	.57
Range	2.6	2.8
R/N	.0743	.0778
$(R/N)^2$	.0055	.0061
SED	.1077	
t	.2786	
df	69	
p	.3820886	

TABLE O

Comparison Statistics of D vs. M Levels
of the TABE for Miami Skill Center

STATISTICS	PRE AND POSTTEST	
	Level: D – D	Level: M – M
n	16	4
Mean CS	.76	.5
Range	2.7	1.0
R/N	.169	.125
$(R/N)^2$	.0286	.0156
SED	.2102	
t	1.2369	
df	18	
p	.1228	

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TABLE P

Comparison Statistics of D vs. M Levels
of the TABE for Ventura School

STATISTICS	PRE AND POSTTEST	
	Level: D – D	Level: M – M
n	36	12
Mean CS	.84	.38
Range	3.3	1.3
R/N	.09	.11
$(R/N)^2$	.0081	.0121
SED	.14	
t	3.3	
df	46	
p	$< .001$	

TABLE Q

Comparison Statistics of M–D vs. M Levels
of the TABE for Youth Training School

STATISTICS	PRE AND POSTTEST	
	Level: M – D	Level: M – M
n	4	17
Mean CS	1.43	.524
Range	3.0	1.7
R/N	.75	.10
$(R/N)^2$	.5625	.0100
SED	.7566	
t	1.1975	
df	19	
p	.1221	

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TABLE R

Efficiency Quotients
(Percentage of Module Tests Passed on First Attempt)
for Eight Pilot–Demonstration Sites Separately by TABE Levels

LEVEL	Atlanta	Drake	Gadsden	Indian River	Lively	Miami	Ventura	YTS
E	88%	–	← NOT AVAILABLE →	–	80%	–	–	–
E–M	92%	–		47%	79%	–	–	–
E–M–D	75%	–		60%	–	–	–	–
M	86%	79%		55%	68%	98%	61%	75%
M–D	90%	76%		68%	74%	86%	72%	92%
D	88%	80%		76%	76%	88%	70%	–

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APPENDIX B

Staff Training Packages for IMTS

CONTENT OF STAFF TRAINING PACKAGES FOR IMTS

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PRE–PLANNING PACKAGES

A. Preplanning Guide
   1. Trainer's Guide
   2. Printed version of Introduction to the IMTS
   3. IMTS Brochure
   4. Justification Information
      a. Questionnaire
      b. Concept Paper, "Toward an IMTS"
   5. Description of Staff Training
      a. Script for Transparencies
      b. Transparency Copy
      c. Samples of Workshop Agendas *(Also used in each workshop)*
      d. Chart of Staff Training Plan
   6. Chart of Funding Resources
   7. Commitment Checklist
   8. Application for Staff Training

B. Introduction to the IMTS (Tape/Slide)

C. Monograph: The Total IMTS

D. Brief Review of Project

ORIENTATION WORKSHOP PACKAGE

A. Orientation Workshop Folder
   1. Agenda (Sample) *[Same as in Preplanning Package]*
   2. Discussion Guide
   3. Brief Review of IMTS Project
   4. Questionnaire
   5. Application for Staff Training

B. Tape/Slide: "Introduction to the IMTS" *(Same as one for Preplanning)*

C. "The Total IMTS" (Monograph)

D. Prescribing Exercise *(Same one used for Operating Workshop)*
   1. Tape/Slide *(Same one used for Operating Workshop)*
   2. Printed Sample Set

E. FAM Introduction

F. Suggested Floor Plans *(Also used in the Establishing Workshop)*
   1. Printed
   2. Transparencies

ORIENTATION WORKSHOP PACKAGE (Continued)

G. Component Program Prescribing Catalogs and Guides *(Reading, Language, Arithmetic, Occupational Exploratory Manual, and Complementary Skills*

H. AIMS Orientation
   1. Tape
   2. Forms

I. Budget Specifications for Establishing the IMTS *(Also used for Establishing Workshop)*

J. Establishing Guide and Forms *(Also used in Establishing Workshop)*

ESTABLISHING WORKSHOP PACKAGE

A. Establishing Workshop Folder
   1. Agenda (Sample)
   2. Expected Outcomes Chart
   3. "Boiler Plate" *(Narrative Proposal)*

Also needed from Preplanning and Orientation Packages:

- Establishing Guide and Forms
- Budget and Specifications for the IMTS
- Management Plan Transparencies
- Answers to Questionnaire in Preplanning Package
- Chart of Staff Training Plan *(Printed & Transparency)*

PRE–WORKSHOP ASSIGNMENTS PACKAGE FOR OPERATING

A. Assignments and Discussion Guide

B. Copy of Employability Program for Staff Training

C. Operating Guides
   1. Complementary Skills
   2. Language and Arithmetic

D. Establishing and Operating the Occupational Exploratory Program (OEP)

E. FAM Introduction

F. Demonstration Recommendations

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CONTENT OF STAFF TRAINING PACKAGES FOR IMTS

PRE–WORKSHOP ASSIGNMENTS PACKAGE FOR OPERATING (Continued)

G. Case Studies *(Interviewing, Diagnosing, Testing, Prescribing, Managing and Evaluating, and Managing the IMTS*

Also needed from the Preplanning Package:
- Concept Paper, "Toward an IMTS"

OPERATING WORKSHOP PACKAGE

A. Operating Workshop Folder
   1. Agenda (Sample)
   2. Assessment Instruments
   3. IMTS Task Assignment Forms
   4. Self–Directed Study List with Progress Chart

B. Trainee Orientation
   1. Printed Script
   2. Tape/Slide

C. Case Study Set *(Interviewing, Diagnosing, Testing, Prescribing, Managing and Evaluating, and Managing the IMTS*
   1. Tape/Slide *(interviewing, Diagnosing & Prescribing)*
   2. Printed Programmed Modules
   3. Workbooks for Diagnosing, Testing and Prescribing

D. Reading Programmed Module and Forms

E. Sample Case Exercise for Complementary Skills

F. Employability Program
   1. Tape/Slide
   2. Sample Case Exercise *(Printed)*

G. AIMS Leader's Guide (PMA Institute)

H. AIMS Participant's Manual (PMA Institute)

I. AIMS Set of Tapes (PMA Institute)

J. Tape/Slide "Programming is a Process" (Tiemann Assoc.)

K. FAM Study Guide *(optional)*

L. Prescribing Catalog *(Language and Math) [Notebook]*

M. TABE Tests and Answer Forms (CTB)

N. FAM Action Line Form *(For Technical Assistance)*

OPERATING WORKSHOP PACKAGE (Continued)

O. Complementary Skills Prescribing Catalog

P. Diagnostic Check Set

Q. Guide to Observations and Appraisals by IMTS Establishment and Operation

Also needed from Preworkshop Assignment:
- Operating Guide for Language and Math
- Operating Guide for Complementary Skills
- Establishing and Operating the Occupational Exploratory Program

TWO–WEEK INTERNSHIP AND INSERVICE TRAINING PACKAGE

(Use materials from Operating Workshop Package as references)

A. Assessment Instruments Performance Checklist for Self–assessment and Monitoring

B. P.I. Process and Products Programmed Module
   1. Tape/Slide
   2. Workbook
   3. Printed Programmed Module

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APPENDIX C

IMTS Funding Sources
Florida – California

IMTS

ESTABLISHING AND OPERATING FUNDS

for

PILOT DEMONSTRATION SITES IN FLORIDA

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BUDGET ITEMS	RESOURCES						
	MDTA Title II (Federal)	Adult Basic Education (Federal)	T E R C (Federal)	University of West Florida (State)	VEA Part B–Disadvantaged (Federal through State)	Minimum Foundation (State Adult General)	County School Board
Coordinator					Lively (1) IRCC (1)		
Learning Managers	MSC (1)	MSC (1)			IRCC (2)	Lively (2) MSC (2) IRCC	
Assistant Learning Managers		Lively (2) MSC (2)					
Aides		IRCC					
Room Space	MSC						Lively IRCC
Furniture	MSC				Lively IRCC		
Instructional Equipment	MSC				Lively IRCC		
Instructional Materials	MSC				Lively IRCC		
Office Supplies	MSC						Lively IRCC
Remodeling	MSC						Lively IRCC
Staff Training (Including Staff Materials)			MSC IRCC Lively CYA	MSC IRCC			

Code:

MSC – Miami Skill Center
IRCC – Indian River Community College
Lively – Lewis M. Lively Technical School

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IMTS

ESTABLISHING AND OPERATING FUNDS

for

PILOT DEMONSTRATION SITES IN CALIFORNIA

BUDGET ITEMS	RESOURCES							
	Adult Basic Education (Federal)	ESEA (Federal)	TERC (Federal)	LEAA (Federal)	California Youth Authority (State)			
Coordinator		VS			DNTS(1) SRCC(1)			
Learning Managers		DNTS YTS			SRCC VS			
Assistant Learning Managers		DNTS SRCC VS YTS						
Aides		DNTS SRCC VS YTS						
Room Space		SRCC			DNTS YTS			
Furniture		SRCC VS YTS			DNTS			
Instructional Equipment		DNTS SRCC VS YTS						
Instructional Materials		DNTS SRCC VS YTS			VS YTS			
Office Supplies		DNTS SRCC YTS						
Remodeling		SRCC VS YTS			YTS			
Staff Training *(Including Staff Materials)*		DNTS SRCC VS YTS	SRCC YTS VS DNTS	SRCC YTS VS DNTS	YTS			

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APPENDIX D

Membership Rosters
for the
Consortium of Colleges and Universities
and
Technical Advisory Committee

MEMBERSHIP ROSTER

FOR THE

CONSORTIUM OF COLLEGES AND UNIVERSITIES

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MEMBERSHIP ROSTER

FOR THE

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APPENDIX E

Study Schedules for IMTS Components

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ARITHMETIC AND LANGUAGE STUDY SCHEDULE

rainee's Name: _____ Manager's Name: _____ LRC: _____

ocial Security No.: ☐☐☐ ☐☐ ☐☐☐☐ Program: _____

oal: _____ Concurrent Training: _____

ACHIEVEMENT TEST RESULTS–Grade Placements

[Fill in Name of Test (Level & Form), Date Taken, and the Achievement Test Results from Profile Sheet.]

Locator Score: _____ Name of Test (Level & Form)	Date Taken	Reading			Arithmetic			Language			Total Battery
		RV	RC	TR	AR	AF	TA	ME	S	TL	
(Pre)											
(Post)											

PRESCRIPTION

t. g. o.	GP	Course Code	Name of Material	Pre Test	Est. Time Hrs.	Date	Time on Module	Time on Test				Module Test Grade				Tutorir Time
ARITHMETIC			Time Allocated Daily	///////	//////	///////	//////////	Attempt No.				Attempt No.				///////
///	///	//////	//	//////	//////	//////	//////////	Pre	1	2	3	Pre	1	2	3	//////

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Cat. Pg. No.	GP	Course Code	Name of Material	Pre Test	Est. Time Hrs.	Date	Time on Module	Time on Test				Module Test Grade				Tutoring Time
ARITHMETIC Continued:								Attempt No.				Attempt No.				
								Pre	1	2	3	Pre	1	2	3	
Total Estimated Study Time – ARITHMETIC																
LANGUAGE – Time Allocated Daily:																

READING STUDY SCHEDULE

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Trainee's Name: _____ Manager's Name: _____ LRC: _____

Social Security No.: ☐☐☐ ☐☐ ☐☐☐☐ Program: _____

Goal: _____ Concurrent Training: _____

ACHIEVEMENT TEST RESULTS—Grade Placements

[Fill in Name of Test (Level & Form), Date Taken, and the Achievement Test Results from Profile Sheet.]

Locator Score: _____ Name of Test (Level & Form)	Date Taken	Reading			Arithmetic			Language			Total Battery
		RV	RC	TR	AR	AF	TA	ME	S	TL	
(Pre)											
(Post)											

General Skills: _____

Specific Skills: _____

READING ASSIGNMENT

Date	Cycle	Program	Assigned Material	TIME		
				Start	Finish	Total

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READING ASSIGNMENT

Date	Cycle	Program	Assigned Material	TIME		
				Start	Finish	Total

PROGRAM	TOTALS		
	Cycles *or* Cartridges	Instructional Hours	Comments
Reading Technology			
EDL			

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COMPLEMENTARY SKILLS STUDY SCHEDULE

Trainee's Name: _____ Manager's Name: _____ LRC: _____

Social Security No.: ☐☐☐-☐☐-☐☐☐☐ Program: _____

PRESCRIPTION

Cat. Pg. No.	GP	Topic Code	Name of Material (Frame Numbers)	Est.* Time Hrs.	Date	Time on Module	Time on Test		Module Test Grade		Tutoring Time
COMPLEMENTARY SKILLS											
							Pre	Post	Pre	Post	

*Estimated times have not been validated: to be included in final revision.

WORK SAMPLING STUDY SCHEDULE

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Trainee's Name: _____ Manager's Name: _____ LRC: _____

Social Security No.: ☐☐☐-☐☐-☐☐☐☐ Program: _____

PRESCRIPTION

Cat. Pg. No.	GP	Unit Code	Name of Material (Frame Numbers)	Est.* Time Hrs.	Date	Time on Module	Time on Test		Module Test Grade		Tutoring Time
							Pre	Post	Pre	Post	

*Estimated times have not been validated: to be included in final revision.

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APPENDIX F

IMTS Impact Study

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ADMINISTRATOR'S ASSESSMENT OF THE IMPACT OF THE INDIVIDUALIZED MANPOWER TRAINING SYSTEM (IMTS)

Introduction

Ten pilot-demonstration sites located in the states of Alabama, California, Florida and Georgia are now operating the Individualized Manpower Training System. These sites represent various kinds of institutions including: community colleges, vocational-technical schools, skill centers and correctional schools. New sites are now being established in California, Florida, Massachusetts, and Oklahoma. The ten sites whose administrators were interviewed include:

1. Southern Reception Center-Clinic, Norwalk, California
2. Youth Training School, Chino, California
3. Ventura School, Camarillo, California
4. J.F. Drake Technical Trade School, Huntsville, Alabama
5. Gadsden State Technical Trade School, Gadsden, Alabama
6. Indian River Community College, Fort Pierce, Florida
7. Miami Skill Center, Miami, Florida
8. Atlanta Area Technical School, Atlanta, Georgia
9. Lewis M. Lively Area Vocational-Technical School, Tallahassee, Florida
10. DeWitt Nelson Training Center, Stockton, California

The purpose of the questionnaire, Administrator's Assessment of the Impact of the Individualized Manpower Training System, was to survey the impact of the IMTS from the administrator's viewpoint. This survey was meant to reveal their knowledge of and attitude toward the IMTS in each particular site. Some of the key operations and issues not being addressed in the Formative Assessment and Management (FAM) effort were covered in this instrument. This report is strictly from the school administrator's viewpoint and does not represent actual opinions of site staff.

Design of the Questionnaire

The impact questionnaire was designed for a small population in order that it could be administered by an interviewer experienced in IMTS procedures, in interviewing people, and in organizing data. Limitation of time did not allow for this instrument to be pilot-tested with administrators; however, it was tried out on TERC staff before it was finalized. It was designed to yield quotable-type responses as well as summaritive data. The questions were developed in a layout that facilitated telephone follow-ups to clarify certain points in question while organizing the collected data.

Methodology

Subjects

Ten administrators were interviewed during the months of November and December, 1973, and asked to complete the questionnaire. The types of administrators interviewed included: Supervisors or Education (2), Supervisors of Academic Instruction (2), Directors of Vocational-Technical Schools (3), the Associate Dean of a Community College (1), the Director of a Skill Center (1), and the Associate Director of a Vocational-Trade School (1). The administrator directly in charge of the IMTS site staff was interviewed. Assistants or associates were interviewed when the chief administrators were not available.

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Interviewers

One experienced interviewer traveled to six of the sites to interview administrators. The other four administrators were interviewed by IMTS monitors who had participated in staff training and were knowledgeable in IMTS concepts and procedures. The questionnaire was designed for one interviewer to collect all of the data which ultimately would provide more consistent results. The interviewer had a working knowledge of the IMTS, and had experience in conducting interviews and organizing data.

Procedures for Collection of Data

The interviewer reviewed the questionnaire thoroughly to familiarize himself with the content contained in the questionnaire so that he could answer any questions which might arise during the interview. The subjects were contacted to schedule interviews. The administrators did not see copies of the impact questionnaire until the time of the interview. The questionnaire was completed in one interview session lasting approximately one to two hours. All sources and figures mentioned by the subject were documented by the interviewer.

Results

Results were compiled in charts, one for each question, relating the response of each subject. The results could not be compared to past results because this was the initial use of the impact questionnaire. The following results were reported:

Each question is followed by the results from the ten sites. The numbers listed represented the number of administrators that responded to each answer.

(1) In comparison with other programs (with similar objectives) for training the disadvantaged, have the effects of the IMTS been positive, negative or the same in these areas?

ADULT BASIC EDUCATION

1.1	10	Positive
1.2	0	Negative
1.3	0	The same

OCCUPATIONAL TRAINING

1.4	5	Positive
1.5	0	Negative
1.6	1	The same
1.6a	3	Not Applicable or Unknown

EMPLOYMENT

1.7	5	Positive
1.8	0	Negative
1.9	1	The same
1.9a	3	Not Applicable or Unknown

Other Comments and/or Supporting Data

The IMTS is not meeting the needs of very disturbed youths at one site. Another administrator commented that the disciplined and structured approach of the IMTS has a positive effect on students. One subject noted that in 20 years of experience, this is the most effective program he has come in contact with concerning the 3 areas above. Others feel that students are curious about this program, they discover and they like it. One administrator feels that more occupational materials at affordable

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costs should be recommended in conjunction with the system. One site may phase out other programs and replace them with IMTS programs. Three of the subjects noted that the IMTS was not involved with occupational training or employment at their sites.

(2) In comparison with other programs (with similar objectives) for training the disadvantaged, have the IMTS trainees' rates of gain in grade levels been higher, lower or the same?

2.1	7	Higher
2.2	1	Lower
2.3		The same
2.4	2	Don't know or Unknown

Other Comments and/or Supporting Data

It was unknown if lower grade gains were the results of "more difficult students" to work with or some other reason at one site. Four of the subjects felt that there was no comparative data available on other similar programs. One subject felt that observation indicated trainees become "better prepared" in the IMTS program than in other programs. One subject believed the IMTS showed greater gains based on a comparison of the Test of Adult Basic Education (TABE) used with the IMTS and the Gates test used in other programs. Another subject feels that grade levels had increased "faster" with the IMTS than with other programs.

(3) Have you been able to serve trainees whom you were unable to serve prior to the establishment of the IMTS?

3.1	5	Yes
3.2	5	No
3.3	0	Don't know

Other Comments and/or Supporting Data

Two subjects said that IMTS offered a lower grade entry level, and therefore they could serve more students. One subject commented that fewer subjects were served because it was difficult to test and prescribe for uncooperative students such as those in the "medpsycho" program. Two subjects agreed that the needs of the students are better met in the IMTS program but there is probably not an increase in the number of students served. One subject feels that there is an increase in those who are served because the IMTS assists in identifying specific deficiencies. Another felt that the IMTS provided a systematic approach to conventional educational services.

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(4) *What is your rating of the effects of the use of the* **Guide to Establishing the Individualized Manpower Training System** *and assistance from TERC in the setting up of your IMTS program?*

4.1	2	Excellent
4.2	4	Very good
4.3	3	Good
4.4	0	Poor
4.5	1	Other

Other Comments and/or Supporting Data

Five sites found the Guide to Establishing the IMTS very useful and helpful. One subject commented that staff turnover had decreased the effects of IMTS staff training. Another subject commented that the trainers were very good, but that some of the forms of the system had been troublesome. He also commented that his site had to print their own forms rather than be properly supplied from TERC.*

One subject commented that requests for supplies and assistance have been properly met, and when the format of the system is followed, everything works. One subject commented that more IMTS TERC staff visits, workshops, assistance in funding and in techniques for securing funds from sources are needed. He agreed that more follow-up assistance was needed after staff training. Another subject commented that the TERC Southeast director is perceived as dedicated and truly concerned.

One site felt that the Guide was erroneous and did not apply to their setting, but that it was a positive approach. It was suggested by the subject from this site that one type of guide is needed for a group that would include Technical Education Centers and Community Colleges and another guide for such institutions as vocational high schools.**

Another subject noted that on the basis of the information furnished in the Guide, some items were bought which did not lend themselves well to the Manpower Development and Training (MDT) situation at his site. One site reported that technical assistance was disorganized and confusing—that there were too many meetings that did not result in viable training.

Another subject reported that the technical assistance was excellent. Site problems due to lack of space, staff and equipment prevented total implementation of the system.

(5) *Would you recommended the IMTS to other schools or institutions for their use?*

5.1	10	Yes
5.2	0	No

*Part of this state's co-commitment with TERC was to furnish all sites in the state with printed forms.

**This subject was the representative of a community college.

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Other Comments and/or Supporting Data

One site mentioned that the process would be more valuable if it could continue at the next (assigned) institution.* Another subject felt the concept and the system were excellent. One site felt that the IMTS offers a structured, disciplined approach focusing on deficiencies, although it is not an answer to all difficulties.

One subject felt that the IMTS should be in all schools. Another subject related that the implementation of the system is frustrating and hard to get organized. He related further that anyone undertaking to use the IMTS should be forewarned.

Another site felt that the system effectively diagnosed trainees' problems for individualized instruction. One subject mentioned that he would definitely recommend it for adult oriented situations concerned with Manpower Development and Training (MDT), etc. He noted that the IMTS has particularly answered the need for basic education.

One administrator recommended it for his state whether or not there were federal funds available for it. He felt that further research, once the system has proved itself is not needed. Another subject commented that the system had been helpful and recommended it.

(6) Have you recommended the IMTS to other schools or institutions for their use? If so, where?

6.1	6	Yes
6.2	4	No

School or Institution	
1.	Winona – Birmingham, Alabama
*2.	Atlanta Area Technical School – Atlanta, Georgia
*3.	Seminole Community College, Florida
*4.	St. Augustine Technical School – St. Augustine, Florida
5.	North Florida Junior College Vocational Division
6.	Perry Vocational School – Perry, Florida
7.	Panama City Technical School – Panama City, Florida
8.	Pensacola Technical School – Pensacola, Florida

*Now IMTS sites.

Other Comments and/or Supporting Data

One administrator felt the entire state youth authority should implement this system. Another commented that until his program had supporting data, he would not recommend the program. One subject had discussed the program with other institutional representatives, but had not given any recommendations.

One subject recommended the system at workshop conferences at state level, to: the Southern Association of Colleges and Schools, the Commission on Vocational Education, State Vocational

*This relates to correctional facilities in one state.

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Education Department personnel, the City Board of Education, and the County Board of Education representatives who visited the IMTS program for information.

One administrator recommended the program to several Indian groups and to about ten other schools. Four other subjects recommended the program in every appropriate situation.

(7) How does your IMTS staff react to the staff performance accountability inherent in the assessment procedures of the IMTS?

Some subjects had positive reactions; they did not enjoy the time entailed in the assessment, but saw its purpose.

Two subjects had negative reactions because of too much paper work. One of these sites had not fully implemented the program yet. One subject did not have a direct answer to the question.

(8) What is your overall rating of the performance of the IMTS staff?

8.1	3	Excellent
8.2	6	Very good
8.3	1	Adequate
8.4	0	Inadequate

Other Comments and/or Supporting Data

Staff turnover has helped prevent better performance was one comment. Also, it was mentioned by the same subject that short term staff tend not to become well trained enough or involved enough in the IMTS to do excellent work. One subject mentioned that terrible obstacles such as construction had to be overcome.

One administrator commented that working with the disadvantaged on a continuous basis is the kind of activity that is intensive and staff need some diversion from long term association with this type of work.

Four other subjects were very favorable in their comments of IMTS staff performance. It was mentioned by these subjects that even under less than optimum conditions their staff performed well and showed excellent progress. Good leadership and administrative support were two reasons for excellent staff performance at one site.

(9) Is the IMTS data collection system sufficient to meet the needs of your school, state officials and the legislature?

SCHOOL

9.1	10	Yes
9.2	0	No
9.3	0	Don't know

STATE OFFICIALS

9.4	10	Yes
9.5	0	No
9.6	0	Don't know

STATE LEGISLATURE

9.7	7	Yes
9.8	0	No
9.9	1	Don't know or unknown
9.9a	1	Not applicable
9.9b	1	No answer

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Other Comments and/or Supporting Data

Two subjects agreed that the data collection system was comprehensive enough for all needs. Three subjects felt the system was sufficient, but that it could be improved.

One subject commented that he had used the IMTS data extensively to justify programs for the disadvantaged. Two other subjects mentioned that the program was more than sufficient.

One subject mentioned that he wished that state officials and legislature would also require attitude changes.

(10) Have the results of the operation of the IMTS met the criteria required of your school, state officials and the legislature?

SCHOOL		
10.1	10	Yes
10.2	0	No
10.3	0	Don't know

STATE OFFICIALS		
10.4	9	Yes
10.5	0	No
10.6	1	Don't know

LEGISLATURE		
10.7	8	Yes
10.8	0	No
10.9	1	Don't know
10.9a	1	Not applicable

Other Comments and/or Supporting Data

One subject was not sure what results were required by state officials or the legislature. Another mentions that once this program is under stood by the State Board they would see the need for it in other schools. Another administrator mentioned that the results of the IMTS are better than most of the structured programs.

(11) Has the IMTS affected other activities of your school in the following areas?

11.1	8	Testing or Evaluation	11.6	2	Programs Terminated
11.2	6	Instructional Technology	11.7	4	Programs Adopted or Expanded
11.3	8	Individualization	11.8	0	None
11.4	5	Flexibility in Scheduling	11.9	4	Other Program Modifications (specify):
11.5	4	Service Orientation, referrals			

Other Comments and/or Supporting Data

One administrator explained that the IMTS was primarily a restructuring program. At one site, a computer instruction lab has been added; one subject commented that shop instructors have learned individualization from the IMTS. Another site plans to add barbering and nursing because students can quickly acquire the needed basic education skills through IMTS.

One subject mentioned that the first impact of the system was negative. He commented that it had been no easy task to incorporate the IMTS. But, programs have been combined with the IMTS.

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Some other modifications mentioned include: diversification of shops, modification of the school's orientation and placement programs, and the closing of all other basic education rooms except for one-to-one tutoring.

(12) Which of the following components of the IMTS does your school use or intend to use? Give reasons for each component not in use or not intended for use.

Use		Intend to Use		IMTS Components
12.1	10	12.6	0	Language and Arithmetic
12.2	8	12.7	1	Reading
12.3	7	12.8	2	Complementary Skills
12.4	4	12.9	1	Occupational Exploratory Program
12.5	2	12.91	2	Prevocational Program

Reasons for not Using or not Intending to Use

Language and Arithmetic – No reasons listed.

Reading – One site has a non-IMTS reading program. Another site is considering a reading program, but not necessarily that of the IMTS.

Complementary Skills – One site has not been able to get organized for the Complementary Skills program. They already have a specified state project for this.

Occupational Exploratory Program – One site has not been presented the OEP and would like the program if money becomes available to fund the program. One site has insufficient money to fund the program and is not too heavily into vocational programs. Two other sites have not had this program presented to them. One site has no available program to make use of the OEP. Another site has a specified state project for this.

Prevocational Program – Two sites have not had this program presented to them. Another site would like to eventually pursue this program. One subject commented that there was not enough time or appropriate programs at his site to use this program. Another subject commented that they were not in prevocational business. Another site intends to use this program as soon as space is available. One subject mentioned that his state has a specified project for this.

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Other Comments and/or Supporting Data

One administrator mentioned that components may be modified to meet the needs of the institutional program. Another subject realizes that the Reading Program should be added and the Prevocational Program should be explored. One subject wished that his site had an assessment period of two or three weeks for the Prevocational Program. Another site lacks staff, space, resources, etc., to add any additional component programs at this time.

(13) Are the on-going costs of the IMTS justifiable as a result of fewer dropouts, better course decisions, faster trainee progress or decreased cost in service to special problem groups.

13.1	3	Fewer dropouts
13.2	7	Better course decisions
13.3	7	Faster trainee progress
13.4	2	Decreased cost in service to a group
13.5	2	Other (specify) _____
13.6		
13.7		
13.8		
13.9	0	No

Other Comments and/or Supporting Data

One subject commented that there may be more dropouts, but the cost is about the same. Another site has more dropouts due to the fact that during initiation of the IMTS nonamendable students were dropped. Also, due to the present small number of students, cost is increased.

One administrator mentioned that the IMTS is doing more for the same cost. His institutional setting (correctional) makes the question of dropouts not applicable.

Another subject could not answer this question positively at this time. One subject described the IMTS as a key program for students who would otherwise be dropouts. Also, he commented that student progress is much faster and this is believed to decrease costs. Another subject reported increased enrollment due to IMTS.

One administrator reported that he was getting more train progress for the dollar, but operating costs are more. Another subject commented that the IMTS meets the needs of students needing remedial assistance.

Another comment was that there is less need for re-training or additional training after trainees are placed on jobs.

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(14) Has the IMTS replaced or are there plans to replace other programs such as:

14.1	3	Adult Basic Education
14.2	1	General Educational Development (GED)
14.3	2	High School Credit Courses
14.4	4	Remedial Reading
14.5	4	Remedial Arithmetic or Math
14.6	4	Remedial Language
14.7	2	Occupationally Related Instruction
14.8	1	English as a Second Language
14.9	1	Occupational Evaluation and/or Guidance
14.91	0	Other (specify):
14.92	2	No

Other Comments and/or Supporting Data

Two subjects have no plans to replace other programs at this point; they did plan to incorporate the IMTS with other programs.

One subject mentioned that the IMTS has replaced Adult Basic Education so far as MDT is concerned. He mentioned further that a weak point in IMTS at his location is the lack of bilingual materials. Some IMTS staff should be bilingual (English and Spanish speaking). Another subject commented that the IMTS has contributed to the establishment of other programs such as occupational evaluation.

(15) Has the IMTS enabled you to develop other programs, expand services, increase enrollment, or make other improvements in your school's program?

15.1	3	Develop other programs
15.2	9	Expand services
15.3	4	Increase enrollments
15.4	0	Other (specify):
15.5		
15.6		
15.7	0	No

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Other Comments and/or Supporting Data

Develop other programs — One subject mentioned that the IMTS enabled a diversification of vocational programs.

Expand services — One site plans to place additional staff into the work sample lab. Another subject mentioned that tutorial and B.E. programs have been expanded.

At another site, the IMTS caused a change in the whole concept of services. It enabled them to change their delivering system for related training. Flexibility in scheduling has enabled them to service students efficiently in a number of vocational settings.

One subject related that after students had completed certain prescribed modules on Fridays, the students were rewarded by being able to select games, extra reading, etc. that they would enjoy. Another subject mentioned that the IMTS provides for vocational counseling.

Increase enrollments — One subject commented that prior to the IMTS his institution could not take certain low grade level trainees. Another subject mentioned that enrollment increased to some degree because of the IMTS, but that trainees primarily came to the institution to learn a trade. Another subject predicted that enrollment would increase in the future because short term trainees could be able to continue in the IMTS at their next institutional setting.*

(16) If any promotional activities have been implemented which are related to the IMTS, list them:

1. Two subjects sited no activity
2. Open houses
3. Newspaper ads and articles
4. Tape slide presentations in the community (schools and organizations)
5. In-service training of staff and faculty members
6. County and State Boards' awareness
7. Fliers and leaflets to be given out on campus and in the community
8. College magazines and school papers
9. Students help promote the program
10. Orientation to certain institutions (educational)
11. Television film of school including IMTS

*This comment applied to a correctional institution.

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(17) Describe any other events, experiences, problems or impact related to the IMTS which you consider to be significant.

One subject commented that the key to the IMTS is the coordinator and the teachers (learning managers). They must believe in its concepts first of all.

Another subject relates that problems are not related to the IMTS per se, but rather to the incorporation of a comprehensive systematic approach to vocational education into an existing program.

One administrator reported that the staff still felt limited by IMTS's lesser involvement of tutoring. The ability to set up and start a student on a study schedule which can be continued in his next institutional setting has been handled well at this site.

Another subject explained that his site planned to eventually expand their program to include all students. They have already altered trade assignment procedures.

The administrator of one correctional institution noted that their educational program had come into limelight because outside people come in to see the IMTS program. This system emphasizes individualization and focuses on the importance of remediating deficiencies. But, the nature of the problem (two-hour blocks of time) dictates scheduling problems.

Another subject commented that this questionnaire should be sent out prior to the interview to allow time for the gathering of information. This questionnaire is too time-consuming.*

One subject noted that it is important that an institution go into the IMTS wholeheartedly or leave it alone. One needs to use all supporting resources of the institution. He feels that it is important to inform all persons who are to be concerned with the system. The IMTS has helped the institution. The IMTS has no big problems at all. The system is very well organized for a pilot program. Student assessment is hard on the moral of the staff at this site. There are too many forms to fill out, and this is backbreaking work. The subject also paid a compliment to the State Department of Florida for their role in supporting this system.

Another subject felt that the IMTS is the greatest thing that ever happened to adult basic education. The vocational part of it should be strengthened, but it is up to the vendors, he added. He would like a prescribing catalogue for occupational areas as well as math and language.

One subject felt that the IMTS is an outstanding and significant program. He said many people came to visit the system and it is disturbing to the program, but the visitors are accomodated when possible. He added that the privacy of trainees, etc., is one of the things that makes this program work so well. Also, visits from outside staff, photographing, etc., are disturbing.

One administrator noted that one of the most significant problems of the system was how the instructors were to be funded. The IMTS staff were counted as supportative staff allowing greater flexibility of operation. The administration is excited about the program, he says. They support it and believe in it; therefore, other staff tend to support the IMTS program.

*The interviewer noted here that the interviewee gave the interviewer a thorough orientation to the school, a tour of the facilities, etc. The administrator added that a great amount of time is spent in such interviews and in completing questionnaires, etc.

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Discussion of Results

It was evident that the use and structure of this questionnaire had room for improvement. But, it should be noted that all subjects were able to respond to all questions. One should again be reminded of the differences in sites. Some of these differences pertain to: number and qualifications of staff, trainees served by the system, environmental setting of each site, components of the IMTS used in each site, funding of the sites, components of the IMTS used in each site, funding of the sites, and the length of time each site has been in operation.

The suggestions for improvement of the IMTS itself should be useful in the future to help further refine the system. Primarily, the administrators of the older sites had the most positive reaction to the system. They had been able to see the results of the system and to collect supportative data at their individual sites to justify the use of the system.

Several of the schools or institutions mentioned who had the IMTS recommended to them are now new sites. Actually thirteen new sites have been approved and staff are now being trained for operation.

It should be noted that the IMTS was developed for use with the disadvantaged, but not the mentally retarded or severely emotionally or mentally disturbed youth or adult. The IMTS has been used with some trainees that could be classified in these categories, but supportative data is not available.

Continued use of this questionnaire with administrators of new sites would be suggested. It was a helpful instrument and could be used to identify weak and strong points in the IMTS. The questionnaire could be improved to serve as a more effective instrument. Results of additional use of the questionnaire should be compared with the results reported in this paper.

In addition to the impact data collected via the interviews with administrative staff, more recent reports from the sites include additional expansion and utilization activities.

Two additional buildings are being constructed at Lively in Tallahassee to accommodate their expansion of the IMTS. They expect to have an increase in the number of IMTS students due to their substituting the IMTS for their traditional adult basic education programs.

At Indian River Community College, they are increasing the time the IMTS will be open to students to include day, night, and Saturdays. They, too, plan to move into larger space.

Miami Skill Center staff have been quite successful in integrating new programmed materials in the Prescribing Catalogue and also in the use of academic games in contingency management.

In California, Ventura School plans to add reading to their present IMTS facility and have already started using the EDL component. YTS plans to expand the Personal–Social Skills component.

On a statewide basis, Florida is designing an accountability system for the IMTS. They have six new sites presently in operation, including an Indian reservation. One additional site has been funded for this year and six more are planned for next year which will include a second Indian reservation. California is designing and initiating a statewide monitoring system and computer program for evaluation purposes.